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STATE AIR DATA INFORMATION SURVEY

Research Triangle Institute

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16. ABSTRACT

This document is an update of EPA-450/3-74-001, State Air Data Information Survey authored by T. H. Lewis of IBM. Questionaires from all states and the District of Columbia were reviewed and the tables and charts of the initial IBM document were updated. Techniques presently used to store, access, and maintain emission inventory and air quality files; significant problems associated with maintaining and using such files; and anticipated problems in meeting the proposed Federal regulations for the State quarterly and semi-annual reporting requirements, especially as related to providing data in Standard EPA formats were addressed in the survey.

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a. DESCRIPTORS		b. IDENTIFIERS/OPEN ENDED TERMS	c. COSATI Field/Group
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U.S. ENVIRONMENTAL PROTECTION AGENCY
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PREFACE

This document was originally prepared by T. H. Lewis, International Business Machines Corporation and was issued as a preliminary report before all of the questionnaires could be returned and analyzed.

Under Contract No. 68-02-1096, the Environmental Protection Agency directed the Research Triangle Institute to revise this document to include the additional twenty-five questionnaire responses which were received subsequent to the first publication. Accordingly, the major effort in this project has been to concentrate on revisions to the tables and charts with updated material provided by the EPA Project Officer, and to perform any textual rewrite necessitated by the statistical revisions.

TABLE OF CONTENTS

		PAGE
Preface		ii
Table of Contents		iii
List of Tables		v
SECTION 1	PROJECT SUMMARY AND MAJOR FINDINGS	1-1
	1.1 Survey Objectives	1-1
	1.2 Summary of Major Findings	1-1
	1.2.1 Emission Inventory Systems	1-1
	1.2.2 Air Quality Data Systems	1-2
	1.2.3 Federal Reporting Requirements	1-2
	1.2.4 Government Support	1-2
	1.3 Conduct of the Survey	1-4
	1.3.1 Purpose and Objectives	1-4
	1.3.2 Method and Schedule	1-4
	1.4 Study Constraints	1-6
SECTION 2	GENERAL RESOURCES AVAILABLE TO STATE AGENCIES	2-1
	2.1 Introduction to State Resources	2-1
	2.2 Distribution of Types of Data Systems	2-1
	2.3 Government Support	2-3
	2.4 Automation Consideration	2-4
	2.4.1 Computer Facilities	2-4
	2.4.2 Available Computer Based Systems	2-7
	2.5 Discussion of Automation Options	2-11
SECTION 3	ANALYSIS FOR EMISSION INVENTORY SYSTEMS	3-1
	3.1 Scope of the Analysis	3-1
	3.2 Storage, Access and Maintenance	3-1
	3.2.1 Source of Emission Inventory Data	3-1
	3.2.2 Storage Techniques	3-2
	3.2.3 Access Techniques	3-3
	3.2.4 Maintenance Techniques	3-3

TABLE OF CONTENTS (continued)

PAGE

3.3 Significant Problems 3-6

SECTION 4 ANALYSIS FOR AIR QUALITY DATA SYSTEMS
4.1 General Comments 4-1
4.2 Storage, Access and Maintenance of Air Quality Data 4-3
  4.2.1 Storage Concepts 4-6
  4.2.2 Access Methods 4-8
  4.2.3 File Maintenance Procedures 4-8

APPENDIX A SAMPLE SURVEY QUESTIONNAIRE

APPENDIX B SURVEY COMPILATIONS

LIST OF TABLES

NUMBER	TITLE	PAGE
1-1	Relationship of Survey Questions to Project Objectives	1-5
2-1	Distribution of Data Systems Used by Agencies	2-2
2-2	Agency Knowledge of Government Support	2-3
2-3	Computational Facilities Available to State Agencies as of July 1, 1974	2-5
2-4	Computerized Emission Inventory Systems Currently in Use	2-8
2-5	Characteristics of Computer Based Emission Inventory Systems for Those Agencies that Responded to the Questionnaire	2-9
2-6	System Compatibility with NEDS Specifications	2-10
2-7	Air Quality Data Systems Currently in Use	2-12
2-8	Characteristics of Automated Air Quality Data Systems	2-13
3-1	Emission Inventory Data Sources	3-1
3-2	Emission Inventory Storage Characteristics	3-2
3-3	Summary of Agencies Storing Confidential Data	3-4
3-4	Access Techniques and Report Generation Capabilities for Computer Based Emission Inventory Systems	3-5
3-5	Emission Inventory Maintenance Practices	3-5
3-6	Number of Agencies Maintaining Files That Exceed the Number of Sources in NEDS	3-8
3-7	Count of Agencies that Have Submitted Emission Data as Reported by the Survey Compared with NEDS Content	3-8
4-1	Comparison of Agencies That Have Submitted One or More Quarterly Reports as Shown by the Survey and NADB Contents	4-1
4-2	Compatibility Factors for Agency Air Quality Data Systems	4-2
4-3	Manpower Requirements for Air Quality Data Systems	4-3
4-4	Summary of Required, Proposed, and Reporting Monitoring Sites by State	4-4
4-5	Source of Air Quality Data	4-7
4-6	Air Quality Data Storage Summary for Manual Systems	4-7
4-7	Air Quality File Maintenance Summary	4-9

SECTION 1

PROJECT SUMMARY AND MAJOR FINDINGS

1.1 Survey Objectives

A State Air Data Information Survey was conducted under the auspices of the National Air Data Branch, EPA, to identify and investigate possible problems at the state level that are associated with emission inventories and air quality data systems. The study concerns itself with problems arising during the normal course of daily activities as well as concentrating on the problems related to the Federal requirements for quarterly and semi-annual reports of air quality and emissions data.

The more significant conclusions of the survey are presented in this section. Detailed analyses are presented in Sections 2, 3, 4, which deal with the basic resources, emission inventory system and air quality data systems, respectively.

1.2 Summary of Major Findings

Operating problems as well as those arising from Federal reporting requirements are constrained to a few specific agencies rather than being generally present at all agencies. The problems that did appear are related to differences in coding practices used for emission inventory systems. The relatively long period during which SAROAD has been available as a system seems to have alleviated problems in handling air quality data insofar as reporting procedures are concerned. Nonetheless, there seems to be a greater need to automate air quality files than emission inventory files. This probably stems from the differences in size, frequency of reference and data processing requirements between the two types of files.

The major findings are presented below in four categories:

a. Emission Inventory System
b. Air Quality Data System
c. Federal Reporting Requirements
d. Government Support

1.2.1 Major Findings - Emission Inventory Systems

1. Of the 37 agencies currently using manual emission inventory systems, only 32% indicated satisfaction with the system. From

this, we might conclude that the remaining agencies (68%) will convert to automated systems as early as practicable. Those agencies not opting for automation are characterized by being responsible for monitoring a small number of air pollution sources. The cut-off point appears to be near 100 file entries such as a permit or NEDS form.

2. The availability of CDHS, particularly EIS, will benefit a significant number of agencies (approximately 35%). The ability to automate with assurance that NEDS reporting compatibility will be achieved will reduce agency resource requirements to store, maintain and access emission inventory data.

3. The requirement for reporting emissions data in NEDS format on a semi-annual basis does not affect those agencies whose existing emission inventory systems are compatible with the NEDS specifications. The difficulties that some agencies have in reporting in NEDS format involve the need to cross-reference such data elements as source identification, source classification codes, units of measure, source definition and to a lesser extent differences between the data elements maintained versus the elements required by NEDS.

4. At least 76% of all agencies have, or could have, access to computer facilities whose use would benefit the collection, storage, maintenance and access of emissions data. [This capability is important as a means of recompiling inventories in order to review and modify rules and regulations especially when it comes to accommodating changes necessitated by such situations as the energy crisis.]

5. Agency resource requirements, especially as related to manpower, are reduced for automated systems provided that the agency does not undertake the development of the system. Furthermore, automated systems reduce the dependence of manpower requirements on the size of the emission inventory. The manpower savings achieved by installing existing automated systems as opposed to locally developing such systems is estimated to be at least 2 man years/year which represent manpower development costs.

6. Agencies planning to automate their emission inventory systems have access to at least nine automated systems. Eight are

available from other state agencies. One, the Emission Inventory Subsystem (EIS) of CDHS is available from the government. At least one is available from industry.

1.2.2 Major Findings - Air Quality Data Systems

1. Approximately 52% of the state agencies have computer based air quality data systems.

2. All agencies have air quality data systems which are essentially compatible with SAROAD. SAROAD perfected input formats are used by at least 64% of the state agencies. SAROAD reporting formats are used by at least 95% of the agencies.

3. The storage, access and maintenance of air quality data present no unusual problems to air pollution control agencies.

1.2.3 Major Findings - Federal Reporting Requirements

1. All agencies are aware of the Federal reporting requirements as expressed in the Federal Register, Vol. 38, No. 149, August 3, 1973, as well as the support provided through NADB. However, few agencies having manual systems have prepared semi-annual reports and, as a consequence, may have underestimated the impact and difficulty of this requirement.

2. The Federal reporting requirement for quarterly and semi-annual reports of emission and air quality data does not significantly impact air pollution control activities at the state level. Less than 18% of the agencies responded that federal reporting impacted their operations. The impacts that were reported were small and for short periods of time.

1.2.4 Major Findings - Government Support

1. The government program to distribute information regarding support and services in the fields of emission inventories and air quality has been effective. Additional efforts are desirable to publicize the services available from NADB such as those provided by remote terminals located at Regional Offices.

2. Government provided automated systems for emissions inventories and air quality data are desirable. Development of the systems, particularly those designed for installation at agency locations should be accelerated to meet agency requirements.

1.3 Conduct of the Survey

1.3.1 Purpose and Objectives

A survey of all state air pollution control agencies has been conducted under the auspicies of the National Air Data Branch of the Office of Air Quality Planning and Standards of the Environmental Protection Agency. The survey was conducted to obtain information to describe the scope and size of state systems for handling emission inventory and air quality data for the purposes of identifying problems associated with the normal use of such systems as well as the impact of Federal reporting requirements. The specific objectives established for the survey project are:

I. Develop for internal EPA use a standardized evaluation system that records at least the following items related to state air pollution control agencies:

a) techniques presently used to store, access, and maintain emission inventory and air quality data files.

b) significant problems associated with maintaining and using such files.

c) anticipated problems in meeting proposed Federal regulations for the state semi-annual and quarterly reporting requirements, especially as related to providing data in standard EPA formats.

II. Identify available computer based systems and alternative procedures for maintaining and using state files.

III. Recommend suitable options available to state agencies and delineate advantages and disadvantages of such alternatives.

1.3.2 Method and Schedule

In order to meet these objectives a survey project was established in late September 1973. The schedule for completing the project was relatively stringent and allowed two weeks for each of the four major tasks which consisted of :

a. Development of the questionnaire and distribution to regions
b. Completion of questionnaires at regional offices
c. Compilation and analysis of completed questionnaires
d. Preparation and delivery of final report

The plan of action adopted at that time allowed for the development of survey questions addressing each of the study objectives. A sample of the questionnaire form is contained in Appendix A. The type and scope of questions developed were influenced by the desire to limit the time to respond to not more than 30 minutes per state agency.

A total of thirty-three (33) questions were formulated. The questions were directed toward ascertaining: a) the basic resources of a state agency; b) type, capabilities and problems of emission inventory systems; and c) type, capabilities and problems of air quality data systems. The questions related to air quality were restricted to the data handling functions and excluded those tasks related to data collection. Most of the questions were designed such that the responses would provide insight into more than one survey objective. The anticipated contribution of the questions to the study objectives is shown in Table 1-1, "Relationship of Survey Questions to Project Objectives."

Table 1-1. Relationship of Survey Questions to Project Objectives

	Questions Applicable to:	
Objective	Emission Inventory	Air Quality
Ia - Storage, Access and maintenance technique	4, 5, 7, 8, 12, 13 14, 15	22, 23, 24, 25, 27
Ib - Problems of maintenance and use	4, 5, 6, 7, 9, 10 11, 12, 13, 14, 15, 16, 20, 21	23, 24, 26, 27, 28, 31, 32, 33
Ic - Federal reporting problems	1, 2, 5, 9, 10, 16, 17, 18, 19, 20, 21	1, 2, 24, 29, 30, 31, 32
II - Available system	3, Form 1	3, Form 2
III - Agency Option	1, 2, 3, 21	1, 2, 3, 33

The questionnaires were distributed to each regional office by National Air Data Branch (NADB). Various techniques were used by regional office personnel to complete the survey forms for each state air pollution control agency in the region. The completed forms were returned to the NADB, EPA in Durham, N. C. Copies of these forms were then forwarded to the project team responsible for analyzing the responses.

The responses to the questionnaires are summarized in a series of charts and tables which are contained in Appendix B, Survey Compilations. These compilations were reviewed and analyzed to form the body of the report. The compilations can be used also for purposes beyond the scope of this project; in particular, they can be used to identify subjects and problems for which more detailed investigation would be desirable.

The responses were generally definitive although not all questions were answered for each state agency. Appropriate adjustments were made during the analysis to disregard the lack of responses.

1.4 Study Constraints

The analysis and conclusions of this report are based primarily on the responses to the questionnaire and information made available from the NEDS report monitoring system. The NEDS reports reviewed were:

a. NEDS Point Sources listing, dated July 21, 1974.

b. Summary of Monitoring Activity, NADB, July 17, 1974.

Additional sources of information are referenced in the text.

In those cases where ambiguous responses were observed in the questionnaire, analytic interpretations were made. Such interpretations sought the most reasonable compromise among the conflicting responses.

The decision to restrict the time to complete a questionnaire to approximately thirty minutes limited the scope of the survey with regard to formulation of questions and the detail that could be obtained.

The stringent schedule precluded an intermediate test of the questionnaire prior to release to EPA.

SECTION 2

GENERAL RESOURCES AVAILABLE TO STATE AGENCIES

2.1 Introduction to State Resources

Government support, computer facilities, data systems and manpower are considered to be the basic resources available to state agencies for operating emission inventory and air quality data systems.

Government support is considered in Section 2.3 from the points of view of:

a. services provided to agencies

b. data systems made available to agencies

c. effectiveness of the distribution of information regarding the services and systems.

Computer facilities available to state agencies are discussed in Section 2.4. The intent of this section is to establish the availability and capability of computer facilities as opposed to the current utilization of computers.

2.2 Distribution of Types of Data Systems

Data systems in use include manual, punched card and automated systems. The distribution of the types of data systems used by various agencies provides a good background for comparing the use of existing resources and for visualizing the effect of resource availability nationwide.

Table 2-1 shows the distribution of emission inventory and air quality data systems currently employed by the state agencies responding to the survey. These results were obtained from questions 5 and 21 of the questionnaire, which are summarized by region in charts 5 and 21 of Appendix B.

As shown, seventy percent (70%) of the agencies have manual emission inventory systems, and over half (57%) have automated or punch card air quality systems. Twenty-six percent (26%) of the agencies have been able to automate both systems.

The second column of Table 2-1 was consolidated from the results of questions 21 and 33, which addressed the subject of agency satisfaction with their current system. Since only 12 agencies (32%) indicated

Table 2-1. Distribution of Data Systems Used by Agencies

	Number of Agencies	Agencies Satisfied With Current System
Emission Inventory		
Manual	37 (70%)	12 (32%)
Computer	16 (30%)	10 (63%)
Air Quality		
Manual	21 (39%)	9 (43%)
Computer	26 (48%)	19 (73%)
Punch Card	5 (9%)	2 (40%)
None	1 (2%)	--
Both	1 (2%)	--
Both E.I. and A.Q. System Automated	11 (26%)	--

(Reference: Appendix B, Charts 5 and 21)

satisfaction with their current manual emission inventory systems, it might be inferred that the remaining 25 agencies (68%) might be expected to change to automated systems. Such an inference is admittedly weak, although it is supported by statements-of-intent appended to the questionnaire by some of the agencies. Such marginal comments appended to the questionnaire by the agencies indicated plans for local automation development, or installation of EIS. Similarly, with regard to those agencies employing manual air quality data systems, some indicated plans to begin local automation development, whereas others planned to install AQDHS. Thus, it is reasonable to conclude that many agencies will automate their data systems in the near future.

2.3 Government Support

Government support is defined to include the facilities provided by NEDS and SAROAD as well as the distribution of information discussing the services available from these systems. Primary information in the area is derived from questions 1 and 2 of the survey which deal, respectively with the distribution of service information pertaining to NEDS, SAROAD, and CDHS, and the services available to agencies from these systems.

These questions attempt to determine the extent to which EPA has been able to publicize NEDS, CDHS, and SAROAD, the acceptability of the standard reporting formats and the effectiveness of governmental support. The results are summarized in Table 2-2, and illustrate the overall status of government support. All responding states indicated that both NEDS and SAROAD capabilities were known. However, knowledge of CDHS has not been so widely disseminated; 65% of responding agencies indicated awareness of the Emission Inventory Subsystem (EIS) of CDHS and 81% indicated

Table 2-2. Agency Knowledge of Government Support

	A	B	C
APTD 1135 - NEDS	98%	59%	45%
EIS/CDHS	65%	-	-
AQDHS/CDHS	81%	-	-
SAROAD	98%	70%	76%

Col A - percent of agencies which have had a system description
Col B - percent of agencies who have used available support services
Col C - percent of agencies aware of all government services available
(Reference: Appendix B, Charts 1 and 3)

knowledge of the Air Quality Data Handling Subsystem (AQDHS) of CDHS. It is noted that official documentation on EIS became available to EPA in November 1973; thus prepublication information distribution has been quite effective.

Fifty-nine percent (59%) of the state agencies have requested reports from NEDS and over 70% have utilized SAROAD. It would appear that the greater awareness of SAROAD over NEDS is due to the longer existence of SAROAD and the consequent greater use. It is interesting to note that although 59% of the state agencies responding have made use of NEDS outputs, less than half (45%) of the responding agencies felt that they completely understood the services available to them from NADB either directly or through remote terminal facilities available at Regional Offices.

2.4 Automation Consideration

2.4.1 Computer Facilities

Question 3, which deals with the subject of the availability of computer facilities, is summarized in Table 2-3. The parts of question 3 requesting core size and compilers were included to determine if subsystems of CDHS could be implemented on computers currently available to state agencies. Of the 54 agencies responding, 39 reported having access to one or more computers.

Of the 39 computers reported, 25 had adequate core size and the appropriate programming language compilers; it was concluded that all facilities having computers could accommodate CDHS. Thus it is concluded that the CDHS concept is viable and that its subsystems (EIS and AQDHS) can be implemented as desired for most state agencies. It was noted, however, that the 100K byte (or equivalent) core requirement for operating CDHS subsystems tends to be at the upper range of core allocations as normally made by data processing departments.

Only a small fraction of state agencies have direct control of their computer facilities; most states rely on the facilities provided by another state agency. Most of the agencies have adequate computer time for their emission inventory system and air quality system.

Table 2-3. Computational Facilities Available to State Agencies as of July 1, 1974

REGION	STATE	MAKE	MODEL	CORE	NO. OF TAPES	COMPILER(1)	USAGE(2)	ADEQUATE TIME E	ADEQUATE TIME A
I	Connecticut	IBM	370/155	250K	18	C, F	EI, AQ	Y	Y
	Maine	Honeywell	6000	256K	12	C, F	------	-	-
	Massachusetts	IBM	370/155	1500K	5	C, F	EI, AQ	Y	Y
	New Hampshire	No computer available							
	Rhode Island	IBM	360/40	110K	4	C, F	------	-	-
	Vermont	No computer available							
II	New Jersey	IBM	370/145	750K	7	C, F	AQ	-	Y
	New York	IBM	370/155	500K	13	C, F	EI	Y	-
		Burroughs	3500	150K	4	(3)	AQ	-	Y
	Puerto Rico	IBM	370/155	700K	6	C, F	None	-	-
	Virgin Islands	No computer available							
III	Delaware	IBM	360/40	128K	4	C, F	EI	Y	-
		IBM	1130	8K	0	F	AQ	-	Y
	Washington, D.C.	No computer available							
	Maryland	IBM	370/145	1000K	6	C, F	EI, AQ	Y	Y
	Pennsylvania	UNIVAC	70/45	131K	6	(3)	EI, AQ	Y	Y
	Virginia	IBM	370/155	500K	4	C, F	EI	Y	-
	West Virginia	No computer available							
IV	Alabama	UNIVAC	1108	262K	10	C, F	EI, AQ	Y	Y
	Florida	UNIVAC	70-45G	196K	6	C, F	EI, AQ	Y	Y
	Georgia	UNIVAC	1106	262K	2	C, F	EI, AQ	Y	Y
	Kentucky	IBM	370/165	2000K	12	C, F	AQ	-	Y
	Mississippi	IBM	370/155	1000K	12	C, F	AQ	-	Y
	North Carolina	IBM	370/145	500K	6	C, F	AQ	-	Y
	South Carolina	No computer available							
	Tennessee	IBM	370/155	250K	15	C, F	AQ	-	Y
V	Illinois	IBM	370/165	200K	3	C, F	EI, AQ	Y	Y
	Indiana	IBM	370/165	190K	16	C, F	None	-	-
	Michigan	IBM	370/155	100K	8	C, F	EI	Y	-
		CDC	6500	200K	4	C, F	AQ	-	Y
	Minnesota	CDC	3300	230K	4	C, F	AQ	-	Y
	Ohio	IBM	370/155	2000K	20	C, F	None	-	-
	Wisconsin	UNIVAC	9400	64K	2	C, F	EI, AQ	Y	Y

Table 2-3. Computational Facilities Available to State Agencies as of July 1, 1974 (continued)

REGION	STATE	MAKE	MODEL	CORE	NO. OF TAPES	COMPILER(1)	USAGE(2)	ADEQUATE TIME E	ADEQUATE TIME A
VI	Arkansas	IBM	1130	8K	1	F	AQ	-	Y
	Louisana	No computer available							
	New Mexico	IBM	360	NR	3	C, F	EI, AQ	N	Y
	Oklahoma	IBM	360/145	NR	NR	C, F	- -	-	-
	Texas	UNIVAC	1106	262K	6	C, F	EI, AQ	Y	Y
VII	Iowa	IBM	370	100K	4	C, F	EI, AQ	Y	Y
	Kanas	No computer available							
	Missouri	IBM	360/30	NR	NR	NR	EI,	Y	-
		IBM	370/155	NR	NR	NR	AQ	-	Y
	Nebraska	IBM	370/145, 155	1000K	14	C	EI, AQ	Y	Y
VIII	Colorado	IBM	360/50	756K	12	C, F	None	-	-
		IBM	370/145	1000K	8	C, F	None	-	-
	Montana	IBM	370/145	384K	4	C, F	AQ	-	Y
	North Dakota	IBM	370/145	384K	4	C, F	AQ	-	Y
	South Dakota	No computer available							
	Utah	IBM	370/158	300K	8	C, F	AQ	-	Y
	Wyoming	No computer available							
IX	Arizona	No computer available							
	California	CDC	3300	96K	6	C, F	AQ	-	Y
	Guam	No computer available							
	Hawaii	No computer available							
	Nevada	IBM	360	NR	NR	NR	None	-	-
X	Alaska	IBM	360/50	83K	1	C, F	None	-	-
	Idaho	IBM	370/145	512K	4	C, F	AQ	-	Y
	Oregon	IBM	370/158	560K	7	C, F	EI, AQ	Y	Y
	Washington	IBM	360/65	1000K	16	C, F	EI, AQ	Y	Y

(1) C indicates ANSI COBOL compiler available
F indicates ANSI FORTRAN compiler available

(2) EI indicates computer may be used to support the emission inventory
AQ indicates computer may be used to support the air quality system

(3) Does not have ANSI compilers

Reference: Data provided by EPA, OAWM, OAQPS, NADB

All but one of the states operating computer systems reported having adequate time to run their systems. The exception, New Mexico, reported inadequate time for its emission inventory system. Thirteen states indicated they had access to adequate computer time for one or more systems. Since there is some question of interpretation of the response given by the remaining agency to the question regarding availability of computer time, it is concluded that all states having access (or potential access) to a computer facility will also be able to arrange for enough time to operate both emission inventory and air quality data systems if they so desire.

2.4.2 Available Computer Based Systems

Sixteen agencies reported computer based emission inventory systems and nineteen agencies reported computer based air quality data systems. The availability and capabilities of these systems are discussed in Section 2.4.2.1 for emission inventories and in Section 2.4.2.2 for air quality data systems.

2.4.2.1 Computer-based Emission Inventory Systems. Table 2-4 lists fifteen of the sixteen agencies currently using an automated emission inventory system (Massachusetts indicated their automated system was not functioning). Three of the agencies use the same system, thus, there are twelve different computer based emission inventories reported in this survey. Eight of the systems are available on request to the owning agency. One is available from industry. Three states do not offer their system to other users.

Table 2-5 consolidates the basic system characteristics as reported on Form 1, Basic Characteristics of Computer Based Emission Inventory System.

These systems, exhibited the following common characteristics:

a. card input different from NEDS
b. data storage on disk
c. file maintenance capabilities
d. data edit capabilities
e. data validation capabilities
f. production of summary reports
g. audit trail
h. support to other functional area

Table 2-4. Computerized Emission Inventory Systems Currently in Use

STATE	SYSTEM NAME	SOURCE	AVAILABLE FROM STATE
Alabama	Ala MIRADS EDS	Alabama	yes
Connecticut	IBM STARTER	IBM	no
Delaware	Del SEI	Delaware	yes
Georgia	Ga AQC PTREPORT	Georgia	yes
Illinois	Ill EIS	Illinois	unknown
Iowa	IBM STARTER	IBM	no
Maryland	Md EIS	Maryland	yes
Michigan	Mich EIS	Michigan	yes
Nebraska	IBM STARTER	IBM	no
New Mexico	NM EIS	New Mexico	no
New York	NY APESMS	New York	yes
Oregon	Ore EIS	Oregon	no
Pennsylvania	Pa AQDMS	Pennsylvania	yes
Texas	Tex EIS	Texas	no
Wisconsin	Wis EIS	Wisconsin	yes

Note: Massachusetts, Virginia, Florida, Missouri, and Washington did not respond.

Table 2-5. Characteristics of Computer Based Emission Inventory Systems for Those Agencies That Responded to the Questionnaire

SYSTEM CHARACTERISTIC	NUMBER OF SYSTEMS
Storage Media:	
Tape	6
Cards	5
Disk/Drum	4
Tape and Disk	3
System Capabilities	
File Maintenance	11
Data Edit	11
Data Validation	6
Emission Calculation	7
Logical Retrieval	10
Report Generation:	
Formatted Set Dump	10
Multiple Report Forms	8
Summary Reports	13
Variable Forms	5
Programming Language:	
ANSI COBOL	6
ANSI FORTRAN	2
Both	4
Other	1

Table 2-6. System Compatibility with NEDS Specifications

AGENCY	SYSTEM NAME	NEDS COMPATIBILITY: INPUT	OUTPUT	SOURCE IDENT	SCC	UNITS OF MEASURE	DATA TYPES	SOURCE DEF.
Alabama	Ala MIRADS EDS	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Connecticut	IBM STARTER	No	Yes	Yes	Yes	Yes	Yes	Yes
Delaware	Del SEI	No	No	No	No	Yes	Yes	Yes
Georgia	Ga AQC PTREFORT	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Illinois	Ill EIS	--	--	No	No	Yes	Yes	No
Iowa	IBM STARTER	Yes	Yes	No	Yes	Yes	Yes	Yes
Maryland	Md EIS	--	--	No	No	Yes	No	No
Michigan	Mich EIS	--	--	No	No	--	--	--
Nebraska	IBM STARTER	No	Yes	Yes	Yes	Yes	Yes	Yes
New Mexico	NM EIS	--	--	Yes	Yes	Yes	Yes	Yes
New York	NY APESMS	Yes	No	Yes	No	No	Yes	No
Oregon	Ore EIS	No	Yes	No	No	Yes	Yes	No
*Pennsylvania	Pa AQDMS	Yes	Yes	No	No	No	Yes	No
Texas	Tex EIS	--	--	Yes	Yes	Yes	Yes	Yes
Wisconsin	Wis EIS	--	Yes	--	--	Yes	--	Yes

Note: Dash (--) indicates no response. *The negative responses regarding certain NEDS items would suggest that the input-output compatibility is questionable, and would require a conversion program.

Various other capabilities were exhibited by most systems. These included:

a. emission calculations (7 systems)
b. logical retrieval (10 systems)
c. multiple report formats (8 systems)
d. variable forms (5 systems)

The question of system compatibility with NEDS specifications was addressed in Question 20 and on Form 1 of the questionnaire. The results are summarized in Table 2-6.

2.4.2.2 Computer Based Air Quality Data Systems. Table 2-7 lists the twenty-eight automated air quality data systems currently in use. Nineteen agencies indicated they would make their system available upon request. Four indicated their systems were not available. Five agencies did not respond. It appears that many of these systems are based upon the original version of AQDHS and were modified by the state agency. Table 2-7 also reflects the fact that all but five computer based systems are compatible with SAROAD.

As can be seen in Table 2-8, there is little difference in the general capabilities available in the air quality data systems currently in use. Significantly, however, five systems do not provide for statistical processing.

2.5 Discussion of Automation Options

There are three types of data systems available to state agencies which are distinguished by the developing agency (Federal, state, industry). The choice between these systems, should a state decide to automate, rests on factors other than capability or compatibility with Federal centralized systems (i.e., NEDS, SAROAD). These factors include:

a. development costs
b. documentation
c. system support
d. training
e. installation support
f. system requirements for computer facilities
g. system performance

2.5.1 Agency Options

The data processing functions of the state agencies for emissions and air quality data can be accomplished in either of two modes: manual or automated. A decision to employ one or the other depends primarily on:

a. the size of the data file
b. file access frequency
c. data processing/manipulation requirements
d. funding constraints

Table 2-7. Air Quality Data Systems Currently in Use

STATE	SAROAD COMPATIBLE	AVAILABLE TO OTHER STATES
Alabama	yes	yes
Arkansas	yes	no
California	no	yes
Delaware	yes	yes
Florida	yes	yes
Georgia	yes	no response
Idaho	yes	yes
Illinois	yes	no response
Iowa	yes	no response
Kentucky	yes	yes
Maryland	yes	yes
Massachusetts	yes	yes
Michigan	yes	yes
Minnesota	yes	no response
Mississippi	yes	yes
Montana	yes	yes
New Jersey	yes	yes
New Mexico	yes	no
New York	yes	yes
North Carolina	yes	yes
North Dakota	no	yes
Oregon	no	yes
Pennsylvania	no	yes
Tennessee	yes	yes
Texas	yes	no
Utah	no	no
Washington	yes	yes
Wisconsin	yes	no response

Table 2-8. Characteristics of Automated Air Quality Data Systems

SYSTEM CHARACTERISTIC	NUMBER OF SYSTEMS
Storage Media	
Cards	12
Tape	21
Disk/Drum	6
System Capabilities	
File Maintenance	24
Data Edit	25
Data Validation	19
Statistical Processing	23
Logical Retrieval	20
Report Generation:	
Formatted File Dump	20
Multiple Reports	20
Summary Reports	26
Statistical Reports	21
Programming Language:*	
ANSI COBOL	8
ANSI FORTRAN	9
Both	10
Other	4

*Note: Alabama did not respond. Those states indicating another programming language also used COBOL, FORTRAN, or both.

For small data files on the order of 100 emission sources or 8-10 air quality monitoring sites, the most obvious choice is the manual mode. This has the advantage of low cost while minimizing the disadvantages associated with manual processing of large files.

For those agencies faced with large data files and the need to frequently reference this data, a decision to automate is most reasonable. In this case a further decision is needed; what means of automation is most practical? In the areas of emissions and air quality data there are at least five choices, namely:

- in-house development
- contract development
- installation of government-provided options
- installation of industry developed systems
- installation of system in use to another agency

In-house development has several advantages including:

- greater assurance that system meets all agency requirements
- greater assurance that agency personnel can easily maintain the system and modify it as requirements change

There are disadvantages that must also be considered. These include:

- large, but temporary personnel requirements during the development phases
- relatively large development costs
- long lead time to accommodate system analysis and development
- requirement to produce system documentation and manuals.

The advantage for contracting system development tends to parallel those for in-house development. Additional advantages include:

- elimination of large staff requirement during development
- minimum development time
- improved documentation

Contrasting possible disadvantages include:

- relative costs
- need to delegate staff to coordination during development
- need to develop formal, detailed system specifications
- some loss of flexibility during development

The availability of systems provided by the government offered many advantages to the agencies. Included among these are:

- elimination of development costs
- assurance that system is compatible with government requirements
- available documentation
- short lead time for installation

The disadvantages may include installation difficulties and system inflexibility with regard to unusual agency requirements. The effect of these could be reduced if the government undertakes a program of system maintenance, installation support and training. The choice of installing systems available from industry could be good provided the system is compatible with agency needs. Such systems are generally offered with full documentation. Installation support and training are usually available.

Another source of developed systems is found in the system currently in use and made available by some state agencies. These have the advantages that they exist and are available without development cost. They may not, however, meet all agency needs. Disadvantages may be caused by system constraints, installation problems, system maintenance, possibly poor documentation, and lack of training programs. The explicit capabilities and support programs should, of course, be examined prior to selecting one of the systems that are currently in use.

SECTION 3

ANALYSIS FOR EMISSION INVENTORY SYSTEMS

3.1 Scope of the Analysis

This section discusses the findings deduced from the survey questionnaires as they apply to manual and computer based emission inventory systems. Emphasis has been placed on:

a. Identifying techniques used for the storage, access and maintenance of these systems.

b. Identifying problems associated with the routine use of these systems.

c. Identifying problems arising at state agencies in meeting Federal reporting requirements.

d. Identifying techniques or systems available to state agency that might alleviate their emission inventory problems.

3.2 Storage, Access and Maintenance

3.2.1 Sources of Emission Inventory Data

The questionnaire (question 8) suggested several different sources of data for emission inventories. The responses from the state agencies as summarized in Table 3-1 showed a preference for multiple sources to include permit or registrations and questionnaires. However, this tendency was most pronounced for states with manual systems. The responses suggest that the most common basic sources of emission inventory data consist of permit or registration forms.

Table 3-1. Emission Inventory Data Sources

SOURCE FORM	MANUAL SYSTEMS	COMPUTER BASED SYSTEMS	TOTAL
Permit/registration	13	5	18
Inspection reports	0	1	1
Questionnaires	5	3	8
Multiple Sources	19	7	26
TOTAL	37	16	53

Note: There were only 53 responses.

3.2.2 Storage Techniques

Storage techniques were addressed primarily by questions 7 and 9 for manual system and by question 9 and Form 1 for computer based systems. Table 3-2 summarizes the results obtained from these questions. States having computer based systems used tapes and disks as storage files. For states having manual systems, the predominant technique is the storage of original source forms in standard file cabinets. A significant number (47%) used NEDS forms as storage media. As shown in Table 3-2 94% of the states using manual systems reported 5000 or fewer sources per system. One agency, Indiana, reported 9000 sources. New Jersey reported

Table 3-2. Emission Inventory Storage Characteristics

STORAGE CHARACTERISTICS	NUMBER OF AGENCIES Manual	Computer
Separate Files	33	-
Mixed Files	9	-
Volume:		
0-1 file drawers	11	-
2-5 file drawers	10	-
6-12 file drawers	7	-
> 12 file drawers	5	-
Storate Media:		
Permit/Register Forms	13	-
Local E.I Forms	10	-
NEDS Forms	19	-
Number of Sources:		
0-500	20 (54%)	6 (38%)
500-1000	8 (21%)	1 (6%)
1000-5000	7 (19%)	5 (31%)
5000-20,000	1 (3%)	3 (19%)
100,000	1 (3%)	1 (6%)

100,000 sources. The range in the number of sources is from 20 to 100,000; the average size, excluding extremes, is about 450 sources.

Computer based systems accommodated more sources than manual systems. Twenty-five percent (25%) of the automated systems have more than 5000 sources and 56% have more than 1000 sources. The range of the number of sources in computer systems is from 300 sources to 150,000 sources.

Material in the manual files is apparently stored by alphabetic or numeric coding schemes of local design. Storage for computer based systems is controlled by source identification. Codes included may be numeric or alphabetic or a combination. It appears from the survey that manual systems identify sources to the facility level whereas computer based systems usually employ more detailed identification control. Information from sources other than the survey suggests that computer based systems have the capability to identify sources of pollutant down to the level of an individual fuel. However, in these cases storage is usually maintained at the "point" level; that is, to the level equivalent to a stack.

The storage and protection of confidential data do not seem to be a problem. Table 3-3 summarizes the responses in this regard for manual and computer based systems, respectively. Only 25 of the 54 agencies responded to the question on confidentiality. Of these 25, 10 reported that no confidential data were stored. Simple protective devices such as locked files are used to protect confidential data.

Manual storage techniques included:

a. notebooks of NEDS Forms

b. File drawers containing source forms in alphabetic or numeric order

c. NEDS listing of point sources

Computer based systems stored data on disk or tape and used alphabetic or numeric sorting of coded identification keys to maintain file sequence.

3.2.3 Access Techniques

Access techniques used to extract data from manual files are inferred from experience and related to the use of emissions data as reported in the survey form. Access to manual emission inventories are by manual file search. Alphabetic or numeric coding schemes for source identification are used by most agencies.

Table 3-3. Summary of Agencies Storing Confidential Data

AMOUNT OF CONFIDENTIAL DATA	NUMBER OF AGENCIES Manual Systems	Computer Systems	TOTAL
none	5	5	10
0-2%	5	2	7
2-4%	-	1	1
4-6%	2	3	5
>6%	2	-	2
TOTAL	14	11	25

Note: Only 25 agencies responded to the question regarding confidentiality.

Two-thirds of the computer based systems were reported to have a logical retrieval capability. Thus most of these systems have the capability to select one or more sources from the file as a function of some predetermined criteria. These criteria may be source identification, level of pollutant emission, source location, or other factors of immediate interest. Ten computer based systems produce formatted file listings. Thirteen systems produce summary reports. Table 3-4 contains a summary of the retrieval and report generating capabilities available in existing systems. This summary together with individual Form's 1 were used to infer the access techniques available in computer based emission inventory systems.

3.2.4 Maintenance Techniques

Techniques used to maintain emission inventories are summarized in Table 3-5 based on responses to questions 12 and 13 of the survey. A review of the table shows that the concepts for file maintenance are the same for both manual and computer based systems. Two such concepts are apparent. The predominant technique is to replace the entire contents (or a significant portion thereof) of a source record whenever one or more data elements of that record are changed as a result of an inspection, new permit application or some other factor. This technique is employed

Table 3-4. Access Techniques and Report Generation Capabilities for Computer Based Emission Inventory Systems

	NUMBER OF SYSTEMS
Access:	
Logical Retrieval	10
Reports:	
Formatted File Dump	10
Multiple Reports	8
Summary Reports	13
Variable Forms	5

Table 3-5. Emission Inventory Maintenance Practices

	TYPE OF SYSTEM	
	Manual	Computer
Techniques		
Form Replacement	[illegible]	-
Form Correction	9	-
Record Replacement	-	9
Field Level Update	-	4
Maintenance Frequency		
Annual	6	3
Semi-Annual	7	3
Monthly	1	1
Weekly	1	3
As received	14	4
Other	7	1

by 10 of the 37 manual systems reported and for 9 of the 16 computer based systems.

The alternative technique is to change only the data element affected. For manual systems this is accomplished by correcting individual data forms. In computer based systems the data record is retrieved, the data element is changed and the record replaced in the file.

Only 5 agencies having manual systems reported that a record of changes made (i.e., an audit trail) was maintained. The remaining agencies did not respond. If an audit trail is not maintained a problem can arise while generating responses for the periodic reporting requirements since these reports are based on reporting changes in the emission inventory.

Ten agencies, having computer based systems, indicated that a complete audit trail of changes, deletions and additions of data elements and data records was maintained. There was, however, no indication that the audit trail was specifically related to Federal reporting requirements. It is believed that these audit trails are made more for the purpose of verifying individual file maintenance activities than for insuring better response to reporting requirements.

3.3 Significant Problems

There were no significant problems related to routine use or to Federal reporting that could be associated in general with all reporting agencies. However, it was clear that a few state agencies were experiencing severe problems in several areas. Perhaps the greatest problem has arisen in those state agencies whose emission inventory was developed before NEDS specifications became available. In some instances data storage concepts were developed that turned out to be significantly different from the NEDS specifications. This has created problems both in normal use and maintenance of emission inventories as well as in the generation of Federal reports. Major incompatibilities were reported by 29 agencies for such key data elements as:

- Source identification (11 manual systems, 7 computer systems)
- Source classification codes (12 manual systems, 7 computer systems)
- Units of measure (11 manual systems, 2 computer systems)
- Types of data (15 manual systems, 2 computer systems)
- Definition of a source (12 manual systems, 5 computer systems)

Such incompatibilities suggest major problems by imposing a need to maintain and use special procedures such as:

- maintaining cross references for sources, source classification codes, units of measure, and previous changes
- the addition of data elements not specified by state rules
- the addition of data elements required by the state solely to satisfy Federal reports

These activities place a burden on daily maintenance operations as well as on the generation of Federal reports.

The selection of reportable sources is further complicated by the fact that a source must be reported only if it emits at least 25 tons/year of a pollutant. Progress in air pollution control tends to reduce emissions below the reporting criteria.

The number of sources maintained by state agencies generally exceeds the number of sources that must be reported to NADB. As shown in Table 3-6 the major impact of this is the need to develop procedures to select the appropriate sources which are limited (Federal Register, Vol 38, August 3, 1973) for a reporting period to:

a. Those sources coming into compliance with a control regulation
b. New or modified sources
c. Discontinued sources.

In the manual systems the problem is resolved by noting changes according to the above criteria as they occur. For computer based systems the problem may be resolved by periodically selecting those sources whose "date of entry" lies within the reporting period.

The foregoing problem areas were inferred from the responses to several questions which relate to various aspects of size, content, and compatibility of emission inventory files. Fifteen agencies, out of 47 responding, reported an impact on manpower requirements due to the requirements of federal reports.

Table 3-7 was constructed from the responses to question 19 which asked if the agency had submitted emissions data. Of 52 agencies responding

Table 3-6. Number of Agencies Maintaining Files That Exceed the Number of Sources in NEDS

RANGE OF EXCESS	NUMBER OF AGENCIES Manual Systems	Computer Systems	TOTAL
0-200 sources	15	2	17
200-500 sources	9	4	13
1000-5000 sources	11	6	17
5000 sources	3	4	7
Total	38	16	54

Table 3-7. Count of Agencies That Have Submitted Emission Data as Reported by the Survey Compared with NEDS Content

REGION	AGENCIES IN REGION	*SURVEY INDICATED DATA SUBMITTED BY: AGENCY	CONTRACTOR	TOTAL	NEDS FILE
I	6	2		2	6
II	4	1		1	4
III	6	2		2	6
IV	8	7		7	8
V	6	3		3	6
VI	5	1	3	4	5
VII	4	3		3	4
VIII	6	2		2	6
IX	6	1	2	3	5
X	4	1		1	4
TOTAL	55	23	5	28	54

*Note: 1. Survey data based on questionnaire responses dated September-November 1973.

2. See Appendix B, Table 3-3 for comparative NADB figures on states generally in compliance with reporting regulations.

only 28 indicated that they had submitted emissions data. The table shows the number of agencies that have submitted emissions data, the number of agencies whose data was submitted by contractors, the total number of agencies submitting data as reported in the survey, and the number of agencies listed in the NEDS file as having submitted emission data.

There is no agreement between the numbers obtained from the survey and those obtained from the NEDS file. It is believed that this lack of agreement reflects some misunderstanding of the survey questionnaire. Although it is true that the NEDS file does not contain all of the emissions data for each agency, the file does indicate that some NEDS data have been submitted by each agency.

Some of the differences between the expected and actual data submittals is believed to reflect the current static nature of agency inventories. Consequently agencies may be under the impression that emissions data submittals are not needed because of lack of changes in their inventory.

SECTION 4

ANALYSIS FOR AIR QUALITY DATA SYSTEMS

4.1 General Comments

Air quality data systems were reported for fifty-three of the fifty-four respondents. One agency did not operate any air quality measuring sites and relied entirely on NASN stations operated by EPA. Three types of air quality data systems were described as follows:

- 21 manual systems
- 27 computer based systems
- 5 punched card systems

Ninety-six percent (96%) of all the agencies have submitted air quality data in SAROAD formats. As shown in Table 4-1, the responses to question 29 dealing with the submission of quarterly reports in SAROAD format tend

Table 4-1. Comparison of Agencies That Have Submitted One or More Quarterly Reports as Shown by the Survey and NADB Contents

REGION	AGENCIES IN REGION	SURVEY	NADB
I	6	6	0
II	4	3	1
III	6	6	4
IV	8	8	8
V	6	5	6
VI	5	5	4
VII	4	4	4
VIII	6	6	6
IX	6	6	5
X	4	4	4
TOTAL	55	52	42

(References:- Survey data summarized from Chart 27, Appendix B. NADB data summarized from Summary of Valid Data, National Aerometric Data Bank, First Quarter 1974, dated July 17, 1974)

Table 4-2. Compatibility Factors for Agency Air Quality Data Systems*

	NUMBER OF AGENCIES REPORTING TYPE OF SYSTEM			
	MANUAL	COMPUTER	PC	TOTAL
Air Quality Source Forms:				
SAROAD	20	10	6	36
Other	6	14	0	20
Submission on SAROAD Form:				
Yes	22	25	5	52
No	1	1	0	2
Agency File is Compatible: With SAROAD:				
Yes	20	23	4	47
No	2	5	1	8
Method of Submitting AQ Data:				
SAROAD Form	19	3	2	24
SAROAD Cards/Tape	5	27	2	34
Other	0	2	1	3

*Totals exceed number of agencies because some states reported multiple factors.

to reflect more compliance with reporting requirements than is shown by the NADB data. This is understandable, however, since the NADB data represent only a quarterly summary of valid data in NADB.

The subject of compatibility between agency air quality system and SAROAD is considered in various survey questions and specifically in question 30; responses are summarized in Table 4-2. All evidence leads to the conclusion that most agency systems are fully compatible with SAROAD. The difficulties encountered by NADB in accepting air quality data seem to lie in formatting difficulties rather than in any inherent system problems. As shown in Table 4-2 the SAROAD forms predominate as source forms for collecting and storing air quality data. This implies that both manual and computer based systems maintain appropriate data in proper formats to be SAROAD compatible. Table 4-2 indicates that SAROAD forms predominate as the preferred method of submitting air quality data.

Table 4-3. Manpower Requirements for Air Quality Data Systems

MANPOWER RANGE (man-years)	NUMBER OF AGENCIES REPORTING TYPE OF SYSTEM MANUAL	COMPUTER	TOTAL
0-1	10	9	19
1-3	9	12	21
3-5	1	1	2
5-10	0	1	1
10	0	1	1
TOTAL	20	24	44

Manpower requirements for operating air quality data systems are relatively constant from state to state regardless of such factors as frequency of use, and data volume, but do depend on type of system. There is a tendency to require more personnel to maintain a computer based system than for a manual system. Table 4-3 tends to show that, in general, computerized systems require more personnel. Additionally, Table 4-4 indicates that computerized systems are required to process more monitoring data than manual systems. Mindful of the contrasting skills required for computerized versus manual systems (i.e., technical programming versus clerical filing), we might conclude that, on the average, computerized systems do require more staff personnel than manual systems.

The degree of satisfaction with air quality data systems expressed by state agencies is similar to that expressed for emission inventory systems. That is, agencies with computer based systems tended to be satisfied while agencies with manual systems tended to be dissatisfied. About 65% of the agencies with automated systems were satisfied while only 40% of those with manual systems were satisfied.

4.2 Storage, Access and Maintenance of Air Quality Data

Questions 24, 25, 27, 28 and 29 as summarized on Charts 23, 24, 25, 26 and 27 of Appendix B provided specific inputs to the subjects of storage, access and maintenance of air quality data. Discussion of these topics is given for each area in the following subsections.

Table 4-4. Summary of Required, Proposed, and Reporting Monitoring Sites by State

STATE	TOTAL NUMBER OF MONITORING STATIONS REQUIRED	PROPOSED	REPORTING	DATA SYSTEM TYPE
Alabama	61	64	108	C
Alaska	19	38	34	M
Arizona	51	72	101	M
Arkansas	14	36	74	C
California	172	346	337	C
Colorado	41	98	95	C,M
Connecticut	56	139	118	PC
Delaware	9	88	31	C
District of Columbia	13	27	8	M
Florida	75	75	114	C
Georgia	95	117	105	C
Hawaii	4	34	52	M
Idaho	22	46	30	C
Illinois	141	262	139	C
Indiana	104	329	220	M
Iowa	50	67	83	M
Kansas	44	143	170	M
Kentucky	60	527	440	C
Louisiana	25	34	36	M
Maine	26	47	38	M
Maryland	86	215	234	C
Massachusetts	92	243	147	C
Michigan	77	246	224	C
Minnesota	63	122	170	C
Mississippi	22	52	49	C
Missouri	64	134	138	PC
Montana	27	29	32	C
Nebraska	25	43	54	PC
Nevada	30	55	54	M

Table 4-4. Summary of Required, Proposed, and Reporting Monitoring Sites by State (continued)

STATE	TOTAL NUMBER OF MONITORING STATIONS			DATA SYSTEM TYPE
	REQUIRED	PROPOSED	REPORTING	
New Hampshire	17	65	54	M
New Jersey	61	114	160	C
New Mexico	29	103	101	C
New York	188	506	450	C
North Carolina	67	305	434	C
North Dakota	8	18	16	C
Ohio	194	572	425	M
Oklahoma	35	124	134	PC
Oregon	33	46	99	C
Pennsylvania	177	329	177	C
Puerto Rico	7	64	17	-
Rhode Island	20	83	81	M
South Carolina	61	114	225	M
South Dakota	10	10	10	M
Tennessee	73	197	199	C
Texas	148	692	421	C
Utah	36	71	28	C
Vermont	9	22	7	M
Virginia	108	218	278	M
Washington	67	126	89	C
West Virginia	36	64	49	M
Wisconsin	47	147	117	C
Wyoming	10	13	22	M
American Samoa	2	2	0	-
Guam	5	6	9	M
Virgin Islands	7	10	6	M

(Reference: Summary of Monitoring Activity, NADB, July 17, 1974)

4.2.1 Storage Concepts

The sources of data for air quality data systems are similar for both manual and computer based systems as reflected in Table 4-5.

About 64% of all agencies rely on SAROAD forms as a means of recording air quality data and providing such data to air quality data systems. SAROAD forms are used predominantly (77%) for manual systems, entirely for punched card systems and for 42% of computer based systems.

Data storage characteristics are summarized in Table 4-6. Manual and punched card systems used the same concept which consisted simply of filing the original data source forms. Twenty-one of the twenty-seven computer files were restricted to tape storage, six used disk/drum storage. Air quality data is stored indefinitely, however, some agencies (about 18%) keep an active file for one to two years, putting the older data in a history file. Eighteen agencies indicated their air quality data storage volume was 0-2 file drawers; 8 indicated a storage volume of 3-6 file drawers; and 6 agencies indicated their air quality data storage volume was 6-10 file drawers.

The accumulation of air quality data for manual systems may become a significant problem in the future. An estimate of the magnitude of the problem was developed from the data presented in the NADB status reports, Summary of Monitoring Activity, dated October 9, 1973.

A rough estimate of the number of sensor sites is derived from the number of projected particulate sites (TSP) with the assumption that other sensors are located with at least one particulate site. Although it is known that other pollutants are separately measured, the estimate is useful for speculating about the impact on agency operations due to the measurement program.

Using the estimate as described it is estimated that agencies having manual systems operate an average of 49 sites as opposed to 104 sites for computer based systems.

It is further assumed that each site will generate on the average one SAROAD (or equivalent) form per day to record the sensor data. Thus the manual storage system will grow at a rate of about two file drawers per year.

Table 4-5. Source of Air Quality Data

	NUMBER OF AGENCIES REPORTING		
	LOCAL FORMS	SAROAD FORMS	TOTAL*
Manual Systems	6	20	26
Computer Based Systems	14	10	24
Punched Card Systems	0	6	6
Total	20	36	56

*Total exceeds number of agencies because some states reported multiple sources.

Table 4-6. Air Quality Data Storage Summary

	NUMBER OF AGENCIES
Period of Storage - Active File	
Indefinite	36
1-2 years	8
3-5 years	1
> 5 years	1
Storage Media	
SAROAD Forms	14
Agency Forms	17
Storage Volume	
0-2 File Drawers	18
3-6	8
6-10	6

Note: Some agencies did not respond to these specific questions.

$$\frac{(49 \text{ sites} \times 365 \text{ days/year} \times 1 \text{ page/site/day})}{9000 \text{ pages/file drawer}} = 1.99 \text{ file drawers/year}$$

This estimate agrees reasonably well with the volumes of storage summarized in Table 4-6. The rate of growth for manual systems indicates a growth problem that would be best resolved by automating.

4.2.2 Access Methods

The questionnaire was designed so that access to air quality data files could be inferred from question 26 and Form 2. Unfortunately, insufficient information was received in response to question 26, dealing with report generation, to make valid inferences with confidence. However, the responses in general were reviewed to infer that access techniques for manual systems must depend on a file structuring such that measurements of pollution concentration are filed sequentially by date, for each observing site. This, of course, reflects the method used to collect data for storage as discussed in Section 4.1.1 Access is then accomplished by scanning through the files for a site until the times desired are found. Data for pollutants desired is then extracted and processed as required.

Access to manual air quality data files may become a significant problem in the near future because of the need to reconsider state implementation plans with respect to social, political and economic crises, such as the current fuel shortage, which require access to air quality files for impact studies.

Access to automated air quality data files does not present significant problems. The access techniques reported on Form 2 for all computer based systems employed a logical retrieval which presumably allowed selection of data based on several criteria. The criteria probably included location, time and pollutant as a minimum thereby exhibiting a high degree of compatibility with AQDHS. File access for studies, reports or summaries does not represent a problem in computer based systems.

4.2.3 File Maintenance Procedures

File maintenance for air quality data files consists of two major functions which are considered for this survey. The functions are the addition of data and modification of data in the file. Both of these functions, of course, require file access techniques, and, as discussed in Section 4.1.2, can therefore create problems for manual systems in particular.

The addition of data is the lesser problem because, in general, the technique simply adds a form behind a series of forms at a visually indicated position (e.g., a file separator). On the other hand, changing a data value involves a file search to locate a particular form, the correction of a specific entry and re-positioning of the form in the file. This can be a rather lengthy and error-prone task particularly for large files.

The file maintenance procedures differ somewhat in frequency between manual and computer based systems. As shown in Table 4-7, most air quality data files are maintenanced within one month of the receipt of new data. Any contrast of maintenance practices between manual and computer systems probably reflects the system's unique constraints and practical convenience.

Table 4-7. Air Quality File Maintenance Summary

	NUMBER OF AGENCIES REPORTING TYPE OF SYSTEM		
	MANUAL	COMPUTER	TOTAL
File Maintenance Interval			
As received	9	6	15
1 week		5	5
1 month	7	13	20
3 months	10		10
Other	1	3	4
Total	27	27	54

APPENDIX A SAMPLE SURVEY QUESTIONNAIRE

Emission Inventory

Air Quality

Data System Survey

The attached forms are forwarded to aid in the collection of basic planning information related to emission inventory air quality data systems used at the state and local government levels. The information gathered will be used by EPA internally to evaluate the status of such systems and to ascertain:

a. Techniques presently used to store, access and maintain emission inventory and air quality data files

b. Significant problems associated with maintaining and using such files

c. Anticipated problems in meeting the proposed Federal regulations for the quarterly and semi-annual reporting of emissions air quality data by state agencies, especially as related to providing data in the NEDS format

d. Availability of computer based systems and other considerations for maintaining and using state and local agency data systems.

The survey addresses the above problems in some detail as covered by the attached questionnaire. The questions are grouped in three categories:

a. Those applicable to emission inventory system

b. Those applicable to air quality data system

c. Those applicable to both systems

The basic intent is to obtain information to describe the scope and the size of state systems; to identify problems associated with the use of the systems to meet Federal reporting requirements. Thus it is important to note that the systems of interest exclude data collection functions which are concentrating on storage, retrieval, and report generation. This is a particularly important distinction in the air quality system since air quality monitoring involves many functions related to data collection.

Questionnaires have been designed as guides for collecting relevant information. Different regions will have different questionnaires. Most of the questions are of the multiple choice type. The multiple choices are believed to be reasonably comprehensive, however, the use of remarks is encouraged to record circumstances not adequately described.

You are requested to complete one set of questions for each state within your region. It is suggested that questions whose answers are readily known be completed first and that answers to the remaining questions be reserved for a later time. This will provide for a directed search of the various sources from which the desired information can be obtained.

In order to meet contractual schedules, you are requested to return the completed forms to NADB within ten (10) days of receipt at your office. However, in order to speed the analysis, we would appreciate your returning the questionnaire sooner if possible. The mailing address is:

Dr. James R. Hammerle
Environmental Protection Agency
National Air Data Branch
Research Triangle Park, North Carolina 27711

1. Has the agency received

a. Guide for compiling a Comprehensive Emmission Inventory APTD 1135? YES NO

b. Documentation or briefing on the Emission Inventory Subsystem (EIS) of Comprehensive Data Handling System (CDHS) YES NO

c. Documentation or briefing on the Air Quality Data Handling System (AQDHS) of CDHS YES NO

d. Documentation or briefing on the Storage and Retrieval of Aerometric Data (SAROAD) system YES NO

e. Approval for submitting data on locally devised forms in accordance with paragraph 5.1.7 (3) of the Federal Register, Vol. 38, Aug. 3, 1973 YES NO

2. a. Has the state agency requested reports or data from

1) NEDS YES NO

2) SAROAD YES NO

b. Does the state agency know what reports data and data summaries are available upon request from

1) NEDS YES NO

2) SAROAD YES NO

3. What are the basic characteristics of the computer facility available to the agency for the emission inventory and air quality systems?

   a. Same computer is used for both systems

   b. Different computers are used for each system

   c. List characteristics in following table

Characteristics	**Emmission Inventory**		**Air Quality**	
Make				
Model				
Core Size				
No. Tape Drives				
ANSICOBOL	YES	NO	YES	NO
ANSIFORTRAN	YES	NO	YES	NO

   d. Does the agency control (or own) the computer? YES NO
      If NO; who controls the computer? ____________________

   e. Does the agency have access to enough computer time to operate its

      1) Emmission inventory system? YES NO

      2) Air quality data system? YES NO

4. What type of emission inventory system does the state agency use?

   a. Manual

   b. Uses punched card equipment

   c. Computer based. If so, please complete the accompanying form (Form 1).

   d. If computer based, would state make system available to other states?
      YES NO

5. If the agency uses a computer based system, does the system produce reports (or outputs) compatible with NEDS and SAROAD/formats?

   a. NO

   b. YES, as follows

	NEDS	**SAROAD**
Printed list		
Punched cards		
Magnetic tape		

   c. Yes, with exceptions listed below.

NOTE: 1. NEDS compatibility infers ability to produce output in the format of the NEDS forms (See Guide for Compiling a Comprehensive Emission Inventory, PATD 1135)

2. SAROAD compatibility infers the ability to produce output in the format of the SAROAD SITE and DATA transaction forms. (See SAROAD, Users Manual USEPA, OAP, APTD 0063)

   d. Is data edited

      1. manually YES NO

      2. by computer technique YES NO

6. If the emission inventory system is computer based, does the system have the flexibility to produce reports specifically related to air pollution control management problems such as:

   - Inspection activities
   - Permit (or equivalent) activities
   - Enforcement activities
   - Complaints
   - or Scheduling

   a. No - there is no automated scheme to relate emissions data with functions

   b. There is an automated scheme to extract selected data from the emission inventory data file for special purposes

7. **If the emission inventory is manual:**

   a. **Is the inventory data stored separately from other data?**
   YES NO

   b. **In what form is the data stored:**

      1. **Originals or copies of source forms**

      2. **Other agency forms**

      3. **NEDS forms**

      4. **Other (Specify)**

   c. **What is the approximate volume of storage?**

      1. ______________________________ **file drawers**

      2. ______________________________ **other (specify)**

8. **What is the source of data that becomes the emission inventory?**

   a. **Permits, registration, certifications or equivalent**

   b. **Inspection reports**

   c. **Questionnaires**

   d. **Other (specify)**

9. **How many point emission sources are kept in the state emissions inventory file considering that a source is the equivalent of a permit record or a NEDS form?**

   a. ______________________________ **sources**

10. a. **How are area sources recorded?**

      1. **County**

      2. **UT GRID (give dimensions of grid)** ______________________

      3. **Other (specify)**

   b. **How many such sources are kept?**

   ____

11. List descriptive title and frequency of reports regularly prepared from the emission inventory data. List distribution for those used outside of the state.

12. a. How frequently is the emission inventory file updated? (Indicate average number of transactions)

   1. As received for a total of _____ transactions per ______
   2. Daily in batches of ______ transactions
   3. Weekly in batches of ______ transactions
   4. Monthly in batches of ______ transactions
   5. Other (Specify)

   b. Is an audit trail maintained to record

   1. Additions YES NO
   2. Changes YES NO
   3. Deletions YES NO

13. How are changes made to the emission inventory file?

If Manual System

   a. by replacing entire forms
   b. by correcting forms
   c. other (specify)

If Computer Based

   d. record replacement
   e. field replacement
   f. other (specify)

14. How long is an emission inventory file entry retained in the active file?

   a. Indefinitely
   b. Until changed

      1. Original data is discarded YES NO
      2. Original data is placed in history file YES NO

15. What are the provisions for protecting confidential or proprietary emmissions data?

a. No confidential data are stored.

b. There are no provisions for isolating confidential data within the files.

c. Approximately _____% of the sources contain confidential information.

d. Briefly describe technique used to protect and handle confidential data.

16. a. How many man years per year are needed to maintain the emission inventory system? ____________________

b. If a computer based system is used:

1. How many programmer man years are normally needed to work on the inventory? ____________________

2. How many of these programmers can use

a. COBOL ____________________

b. FORTRAN ____________________

c. Other (specify) ____________________

c. 1. Are people employed with the prime function of collecting emission inventory data (do not count inspectors or engineers whose functions incidentally provide emissions inventory data). ____________________

2. If so, how many? ____________________

17. When semi-annual emission inventory reports are due to EPA, is it necessary to temporarily increase the staffing level above that normally involved in the emission inventory system?

   a. No

   b. Yes, then

      1. What is the percentage of increase? ________

      2. What is the manning increase? ________

      3. What is the impact of this increase on other agency activities? ________

18. What procedure does the agency use to transmit semi-annual emission inventory reports to the EPA regional office?

   a. Annotation of the emission inventory list provided to the agency by EPA

   b. List (or collection of agency forms) containing the required information

   c. NEDS forms

   d. Punched cards in NEDS format

   e. Magnetic tape in NEDS format

   f. Other (specify)

19. a. Has the agency submitted a semi-annual emission inventory report in NEDS format

   YES NO

   b. If NO, why not?

20. Is the data in the agency's emission inventory compatible with:

a. All elements of the NEDS reporting format? YES NO

b. NEDS source identification system? YES NO

c. NEDS source classification code system? YES NO

d. NEDS units of measurement? YES NO

e. NEDS requirements for types of data? YES NO

f. NEDS definition for a point source? YES NO

g. Briefly describe other significant problems arising from the requirement to prepare the semi-annual report in NEDS format.

21. Does the agency consider the emission inventory system generally adequate and efficient for meeting internal agency needs:

a. Yes

b. Yes, for most purposes

c. Yes, for a few purposes

d. No

Comments:

22. What type of system does the state agency use for storing and processing air quality data

a. Manual

b. Uses punched card equipment

c. Computer based. If so, please complete the accompanying form (Form 2).

d. If computer based, would the state make systems available to other states?

1. Yes

2. No

23. Is data edited

1. Manually?

2. By computer technique?

24. If a manual air quality system is used:

a. Is the air quality data stored separately from all other data

YES NO

b. In what form is the data stored?

1. Originals or copies of source forms

2. Other agency forms

3. Other (specify)

c. What is the approximate volume of storage?

1. ______________________ file drawers

2. ______________________ other (specify)

25. What is the source of data for the air quality system?

a. SAROAD forms

b. Local agency forms

c. Other (specify)

26. List descriptive title and frequency of report that are regularly prepared from the air quality data. Indicate distribution for those used outside of the state.

27. How frequently is the air quality data file updated? (indicate number of transactions)

a. As received for a total of _____ transactions per ______

b. Daily in batches of ______ transactions

c. Weekly in batches of ______ transactions

d. Monthly in batches of ______ transactions

e. Other (specify)

28. How long are air quality measurements kept in the active file?

a. Indefinitely

b. Until periodic summaries are available, the summarized data are transferred to inactive (or history) file.

c. Until periodic summaries are available, then summarized data are purged from the file

d. For ______ years, then transferred to inactive (or history) file

e. Other (specify)

29. a. **Has the agency submitted air quality data in the SAROAD formats?**

YES NO

b. **If NO, why not?**

30. a. **Is the data in the agency's air quality data file compatible with all elements of the SAROAD site and data reporting forms?**

YES NO

b. **If the answer to this is NO, briefly describe significant problems arising from the requirement to report air quality data in the SAROAD formats.**

31. **What procedures does the agency use to transmit quarterly air quality reports to EPA regional offices?**

a. **SAROAD transaction forms**

b. **SAROAD transaction cards**

c. **Other (specify)**

32. a. **Considering only the filing, file maintenance, data processing or compilation and report generation functions, how many man years per year are employed to operate the air quality data system?**

____

b. **If a computer based system is used:**

1. **How many programmers are regularly available to work on the air quality system?** ______________________

2. **How many of these programmers use:**

(a) **COBOL** ______________________

(b) **FORTRAN** ______________________

(c) **Other (specify)** ______________________

33. Does the agency consider its air quality data handling procedures generally adequate and efficient for meeting internal agency needs?

a. Yes

b. Yes, in most areas

c. Yes, in a few most significant areas

d. No

Comments:

FORM 1: BASIC CHARACTERISTICS OF COMPUTER BASED EMISSION INVENTORY SYSTEM

STATE ____________________

SYSTEM NAME ____________________

DEVELOPED BY ____________________

IS THE DATA KEPT ON?	TAPE	
	CARDS	
	DISK/DRUM	
	OTHER (SPECIFY)	

IS THE SYSTEM NEDS COMPATIBLE FOR ________?	INPUT	
	OUTPUT	
	UNITS OF MEASURE	
	FIELD SIZES	
	DATA ELEMENTS	

DOES SYSTEM HAVE BASIC CAPABILITY FOR ________?	FILE MAINTENANCE	
	DATA EDIT	
	DATA VALIDATION	
	EMISSION CALCULATIONS	
	LOGICAL RETRIEVAL	

DOES SYSTEM HAVE GENERATION CAPABILITY FOR ________?	FORMATTED FILE DUMP	
	MULTIPLE REPORT FORMS	
	SUMMARY REPORTS	
	VARIABLE FORMS	

IS THE SYSTEM LANGUAGE _____?	ANSI COBOL	
	ANSI FORTRAN	
	OTHER (SPECIFY)	

FORM 2: BASIC CHARACTERISTICS OF COMPUTER BASED AIR QUALITY DATA FILE SYSTEM

STATE ______________________________

SYSTEM NAME ______________________________

DEVELOPED BY ______________________________

IS THE DATA KEPT ON?	CARDS	
	TAPE	
	DISK/DRUM	
	OTHER (SPECIFY)	

IS THE SYSTEM SAROAD COMPATIBLE FOR ________?	INPUT	
	OUTPUT	
	UNITS OF MEASURE	
	FIELD SIZES	
	DATA ELEMENTS	

DOES THE SYSTEM HAVE A BASIC CAPABILITY FOR ________?	FILE MAINTENANCE	
	DATA EDIT	
	DATA VALIDATION	
	STATISTICAL PROCESSING	
	LOGICAL RETRIEVAL	

DOES THE SYSTEM HAVE REPORT GENERATION CAPABILITY ______?	FILE MAINTENANCE	
	MULTIPLE REPORT FORMS	
	SUMMARY REPORTS	
	STATISTICAL REPORTS	

IS THE SYSTEM LANGUAGE ______?	ANSI COBOL	
	ANSI FORTRAN	
	OTHER (SPECIFY)	

APPENDIX B SURVEY COMPILATIONS

LIST OF CHARTS

Number	TITLE	REFERENCE
1	Agency Knowledge of NEDS, CDHS and SAROAD	1a - 1d
2	Use of Special Reporting Formats	1c
3	Agency Use of NEDS and SAROAD Facilities	2
4	Availability of Computer Facilities	3
5	Type of Emission Inventories at State Agencies	4
6	Capabilities of Computer Based Systems at State Agencies	5,6,20
7	Storage Characteristics of Manual E I Systems	7
8	Sources of Data for Emission Inventories	8
9	Size of Emission Inventories	9
10	Reported E I Size Compared to NEDS Data Base	9,10,NEDS
11	Emission Inventory Maintenance Practices (Manual Systems)	12,13
12	Emission Inventory Maintenance Practices (Computer Based Systems)	12,13
13	Storage Concepts and Confidential Data Factors (Manual Systems)	14,15
14	Storage Concepts and Confidential Data Factors (Computer Based Systems)	14,15
15	Manpower Requirements (Manual Systems)	16,17,19
16	Manpower Requirements (Computer Based Systems)	16,17,19
17	Methods Used to Submit Semi-Annual Report	18
18	Compatibility of Agency Systems with NEDS	20
19	Agency Satisfaction with Current Emission Inventory System	21
20	Summary of Form 1 Responses	Form 1
21	Type of Air Quality Data Systems	22
22	Air Quality Data Editing	23
23	Storage Concept Manual Air Quality Systems	24
24	Source Forms for Air Quality Data	25
25	Data Maintenance Concepts - Air Quality Systems	27
26	Storage Concepts for Air Quality Data	28
27	Sumbission of SAROAD Data	29

APPENDIX B

LIST OF CHARTS (continued)

NUMBER	TITLE	REFERENCE
28	SAROAD Compatibility	30
29	Method of Submitting AQ Data	32
30	Staffing Levels for AQ Systems	32
31	Agency Satisfaction with Existing AQ Systems	33
32	Air Quality Data File System Summary	Form 2

APPENDIX B

LIST OF TABLES

NUMBER	TITLE	REFERENCE
B-1	Compilation of Emission Inventory Sources	9,NEDS
B-2	Summary of Staff Increases due to Semi-Annual Reports	17

Chart Number 1: Agency Knowledge of NEDS, CDHS, and SAROAD.

Questionnaire Cross Reference: Question 1a - 1d.

Has the agency received documentation or briefing on support facilities for emission inventories and air quality as provided by EPA?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED		APTD 1135			CDHS (EIS)			CDHS (AQDHS)			SAROAD			
				YES	NO		YES	NO		YES	NO		YES	NO		
I	6	6		6	0		3	3		6	0		6	0		
II	4	4		4	0		4	0		4	0		4	0		
III	6	6		5	1		3	3		3	3		6	0		
IV	8	8		8	0		5	3		6	2		7	1		
V	6	6		6	0		1	5		3	3		6	0		
VI	5	5		5	0		5	0		5	0		5	0		
VII	4	4		4	0		4	0		4	0		4	0		
VIII	6	6		6	0		5	1		5	1		6	0		
IX	6	5		5	0		1	4		5	0		5	0		
X	4	4		4	0		4	0		3	1		4	0		
TOTAL	55	54		53	1		35	19		44	10		53	1		

Chart Number 2: Use of Special Reporting Formats

Questionaire Cross Reference: Question 1e.

Has the agency received approval to submit data to regional offices on locally devised forms?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	YES	NO	UNKN.											
I	6	6	1	5	0											
II	4	4	0	4	0											
III	6	6	1	5	0											
IV	8	8	1	6	1											
V	6	6	1	2	3											
VI	5	5	5	0	0											
VII	4	4	2	2	0											
VIII	6	6	0	6	0											
IX	6	5	0	5	0											
X	4	4	0	4	0											
Total	55	54	11	39	4											

Chart Number 3: Agency Use of NEDS and SAROAD Facilities.

Questionaire Cross Reference: Question 1.

Has the agency made use of the NEDS and SAROAD systems?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED		REQUESTED NEDS SUPPORT			REQUESTED SAROAD SUPPORT			AGENCY AWARENESS OF AVAILABLE EPA SUPPORT						
										NEDS			SAROAD			
				YES	NO		YES	NO		YES	NO	NO RESP.	YES	NO	NO RESP.	
I	6	6		3	3		4	2		2	4	0	4	2	0	
II	4	4		4	0		4	0		4	0	0	4	0	0	
III	6	6		1	5		2	4		2	4	0	4	2	0	
IV	8	8		5	3		5	3		3	5	0	3	4	1	
V	6	6		3	3		5	1		3	2	1	6	0	0	
VI	5	5		3	2		5	0		1	4	0	5	0	0	
VII	4	4		3	1		4	0		0	4	0	3	1	0	
VIII	6	6		4	2		2	4		6	0	0	6	0	0	
IX	6	5		4	1		4	1		3	1	1	4	1	0	
X	4	4		2	2		3	1		1	3	0	2	2	0	
Total	55	54		32	22		38	16		25	27	2	41	12	1	

Chart Number 4: Availability of Computer Facilities

Questionaire Cross Reference: Question 3

What are the basic characteristics of the computer facility available to the agency for emission inventory and air quality systems?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	COMPUTER AVAILABILITY AND CORE SIZE CHARACTERISTICS			PROGRAMMING LANGUAGES			CURRENT USAGE			FACILITY CONTROL				DATA SYS.	
			NO. COMP.	COMP. AVAIL.	CORE ≥100K	ANSI COBOL	ANSI FOR-TRAN	BOTH	EI	AQ	BOTH	AGCY.	STATE	RENT	EPA	EI	AQ
I	6	6	2	4	4	2	0	2	0	0	4	0	2	1	1	3	3
II	4	4	1	3	2	0	0	3	0	0	3	0	3	0	0	2	2
III	6	6	2	4	4	0	0	3	1	0	3	0	3	0	0	3	1
IV	8	8	1	7	7	0	1	6	1	1	5	0	6	1	0	5	7
V	6	6	0	6	3	1	2	2	1	1	4	2	4	0	0	3	4
VI	5	5	1	4	2	0	1	3	0	0	4	1	2	1	0	2	4
VII	4	4	1	3	0	0	0	1	1	0	2	0	2	0	1	2	1
VIII	6	6	3	3	0	0	0	0	0	3	0	0	3	0	0	0	3
IX	6	5	3	2	0	0	0	1	0	2	0	0	2	0	0	1	2
X	4	4	1	3	3	0	1	2	0	1	2	0	2	1	0	2	3
Total	55	54	15	39	25	3	5	23	4	8	27	3	29	4	2	23	30

Chart Number 5: Types of Emissions Inventory Systems

Questionaire Cross Reference: Question 4

What type of emission inventory system does the State agency use?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	SYSTEM TYPE			AVAILABILITY OF COMPUTER SYSTEM TO OTHER STATES		
			MAN	PUNCH CARDS	COMP.	AVAIL.	NOT AVAIL.	NO RESP.
I	6	6	4	0	2	2		
II	4	4	3	0	1	1		
III	6	6	3	0	3	3		
IV	8	8	6	0	2	2		
V	6	6	3	0	3	2		1
VI	5	5	3	0	2		2	
VII	4	3	1	0	2		2	
VIII	6	6	6	0	0			
IX	6	5	5	0	0			
X	4	4	3	0	1		1	
Total	55	53	37	0	16	10	5	1

Chart Number 6: Capabilities of Computer Based Emission Inventory Systems

Questionaire Cross Reference: Questions 5, 6, and 20.

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	OUTPUT COMPATIBLE		EDITING				FUNCTIONAL SUPPORT	COMPATIBILITY WITH NEDS SPECIFICATIONS						
			YES	NO	MAN	COMP.	BOTH	AUDIT		ALL	IDENT.	SCC	UNITS	SRC DEF	DATA TYPES	
I	6	6	2	1	1	0	1		1	3	5	4	4	3	4	
II	4	4	2	0	0	0	2		2	1	2	1	1	2	2	
III	6	6	2	1	1	0	2		2	1	1	1	3	3	2	
IV	8	8	5	1	2	1	3		1	5	6	6	5	6	5	
V	6	6	2	2	2	1	1		1	4	0	0	2	1	1	
VI	5	5	1	1	4	1	0		1	5	5	5	5	5	5	
VII	4	4	2	0	0	0	2		0	3	2	3	3	3	3	
VIII	6	6	2	0	2	0	0		0	1	0	0	0	0	0	
IX	6	5	0	1	0	0	1		0	2	3	3	4	1	4	
X	4	4	3	0	1	0	1		1	0	1	1	2	1	1	
Total	55	54	21	7	13	3	13		9	25	25	24	29	25	27	

Chart Number 7: Storage Characteristics of Manual Emission Inventory Systems

Questionaire Cross Reference: Question 7

Definitions:

NO RESP - No response to unique subordinate question
SEP - Emission inventory data filed separately
MIXED - Emission inventory data filed with other data.
ORIG - Original source forms
LOCAL - Special local forms
NEDS - NEDS forms or listing

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	TYPE OF STORAGE			APPROXIMATE VOLUME (NUMBER OF FILE DRAWERS)					STORAGE MEDIA					
			NO RESP.	SEP	MIXED	0-1	2-5	6-12	>12	NO RESP.	ORIG	LOCAL	NEDS	NO RESP.		
I	6	4	2	4		2	1	1		2	3		1	2		
II	4	3	1	1	2	3				1	1	2		1		
III	6	4	2	4		1	1		2	2	4	1		1		
IV	8	7	1	7		1	4	1	1	1	3	3	6	1		
V	6	4	3	3						6	2	1	1	2		
VI	5	4	1	4		1	1	1	1	1	3		1	1		
VII	4	2	2	0	2		1		1	2	2			2		
VIII	6	6	1	6			4			2	0	5		1		
IX	6	5	1	5		2				4	4	2	2	1		
X	4	3	1	3		1	2			1	1	1	3			
Total	55	42	15	37	4	11	14	3	5	22	23	15	14	12		

Chart Number 8: Sources of Data for Emission Inventory Systems

Questionaire Cross Reference: Question 8

Definitions:

MAN - Manual emission inventory system
C-B - Computer-based emission inventory system

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	PERMIT AND REGISTRATION APPLICATIONS			INSPECTION REPORTS			QUESTIONAIRES			MORE THAN ONE SOURCE				
			MAN	C-B	TOT	MAN	C-B	TOT	MAN	C-B	TOT	MAN	C-B	TOT		
I	6	6	1	1	2	0	0	0	1	0	1	2	1	3		
II	4	4	1	1	2	0	0	0	1	0	1	1	0	1		
III	6	6	2	1	3	0	0	0	1	1	2	0	1	1		
IV	8	8	1	1	2	0	0	0	0	0	0	5	1	6		
V	6	5	2	0	2	0	1	1	0	1	1	0	1	1		
VI	5	5	2	1	3	0	0	0	0	0	0	1	1	2		
VII	4	4	0	0	0	0	0	0	0	1	1	2	1	3		
VIII	6	6	4	0	4	0	0	0	2	0	2	0	0	0		
IX	6	5	0	0	0	0	0	0	0	0	0	5	0	5		
X	4	4	0	0	0	0	0	0	0	0	0	3	1	4		
Total	55	53	13	5	18	0	1	1	5	3	8	19	7	26		

Chart Number 9: Total Point Sources in State Emission Inventory File

Questionaire Cross Reference: Question 9.

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	AS REPORTED ALL AGENCIES					COMPUTER-BASED SYSTEMS REPORTING	AS REPORTED BY AGENCIES WITH COMPUTER-BASED EMISSION INVENTORY SUSTEMS							
			0-500	500-1000	1000-5000	10000-20000	> 100000		0-500	500-1000	1000-5000	10000-20000	> 100000			
I	6	6	2	3	1	0	0	2	0	1	1	0	0			
II	4	4	2	0	0	0	2	1	0	0	0	0	1			
III	6	6	1	1	2	2	0	3	0	0	1	2	0			
IV	8	8	2	2	4	0	0	2	1	0	1	0	0			
V	6	6	2	0	1	2	0	3	1	0	1	1	0			
VI	5	5	4	1	0	0	0	2	2	0	0	0	0			
VII	4	4	2	0	2	0	0	2	1	0	1	0	0			
VIII	6	6	3	2	1	0	0	0	-	-	-	-	-			
IX	6	5	4	0	1	0	0	0	-	-	-	-	-			
X	4	4	4	0	0	0	0	1	1	0	0	0	0			
Total	55	54	26	9	12	4	2	16	6	1	5	3	1			

Chart Number 10: Reported Emission Size Compared to NEDS Data Base

Questionaire Cross Reference: Question 9, and NEDS Point Source Listing date July 21, 1974.

Definitions:

MAN - Manual emission inventory system
C-B - Computer-based emission inventory system

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	RANGE OF EXCESS SOURCES													
			0-200			200-500			1000-5000			>5000				
			M	C-B	TOT	MAN	C-B	TOT	MAN	C-B	TOT	MAN	C-B	TOT		
I	6	6	1	0	1	3	0	3	0	2	2					
II	4	4	2	0	2							1	1	2		
III	6	6	1	0	1				2	1	3	0	2	2		
IV	8	8				1	1	2	5	1	6					
V	6	6	2	0	2	0	1	1	0	1	1	1	1	2		
VI	5	5	2	2	4				1	0	1					
VII	4	4				1	1	2	0	1	1	1	0	1		
VIII	6	6	3	0	3	1	0	1	2	0	2					
IX	6	5	2	0	2	2	0	2	1	0	1					
X	4	4	2	0	2	1	1	2								
Total	55	54	15	2	17	9	4	13	11	6	17	3	4	7		

Chart Number 11: Emission Inventory Maintenance Concepts - Manual Systems

Questionaire Cross Reference: Questions 12 and 13

Definitions:

RESP - Response to specific subordinate question
REPL - Whole file replacement
CORR - File corrected

REGION	AGENCIES IN REGION	AGENCIES WITH MANUAL SYSTEMS	METHOD OF UPDATING FILE					UPDATING FREQUENCY							AUDIT TRAIL	
			RESP	REPL	CORR	BOTH	OTHER	RESP	12 MO	6 MO	MO	WK	AS RECD	OTHER	RESP	AUDIT KEPT
I	6	4	4	3		1		4	1	1			1	1	3	2
II	4	3	2	2				3					2	1	3	0
III	6	3	3	1		2		3					3		3	0
IV	8	6	6		3	2	1	5	1		1		2	1	5	2
V	6	3	2	2				1						1		0
VI	5	3	3		3			3		3					3	0
VII	4	2	2	1	1			2		2					1	0
VIII	6	6	5				5	6	2	1			1	2		0
IX	6	5	4		1	3		5					5		4	1
X	4	3	3	1	1	1		3	2					1	3	0
Total	55	38	34	10	9	9	6	35	6	7	1	0	14	7	25	5

Chart Number 12: Emission Inventory Maintenance Practices - Computer Based Systems.

Questionaire Cross Reference: Questions 12 and 13.

Definitions:

RESP - Response to specific subordinate question
REC REPL - Specific record replaced
FIELD REPL - Whole field replaced

REGION	AGENCIES IN REGION	AGENCIES WITH COMPUTER SYST.	METHOD OF UPDATING FIELD					UPDATING FREQUENCY							AUDIT TRAIL					
			RESP	REC REPL	FIELD REPL	BOTH	OTHER	RESP	12 MO	6 MO	MO	WK	AS REC	OTHER	RESP	ADD	DEL	CHG.		
I	6	2	1	1				1					1		1	1	1	1		
II	4	1	1		1			1				1			1	1	1	1		
III	6	3	3	2		1		3		1		1	1		3	3	3	3		
IV	8	2	2	1	1			2			1		1		2	1	1	1		
V	6	3	3		2		1	3	2			1								
VI	5	2	2	2				2	1				1		2	2	2	2		
VII	4	2	2	2				2		2					2	2	2	2		
VIII	6	0	-																	
IX	6	0	-																	
X	4	1	1	1				1						1	1					
Total	55	16	15	9	4	1	1	15	3	3	1	3	4	1	12	10	10	10		

Chart Number 13: Storage Concept and Conficential Data Factors - Manual Emission Inventory Systems

Questionaire Cross Reference: Questions 14 and 15.

Definitions:

RESP - Response to specific subordinate question
INDEF - Data kept indefinitely
DISCARD - Data replaced by new file is discarded
HISTORY - Storage file for replaced data

REGION	AGENCIES IN REGION	AGENCIES WITH MANUAL SYSTEMS	RETENTION OF DATA				PERCENT OF SOURCES THAT CONTAIN CONFIDENTIAL DATA					SYSTEM TO PROTECT CONFIDENTIAL DATA				
			RESP	INDEF	DIS-CARD	HIS-TORY	RESP	NONE	0-2 %	4-6 %	>6 %	RESP	YES	NO		
I	6	4	4	2	0	2	3	3	0	0	0	4		4		
II	4	3	2	1	0	1	0	-	-	-	-	3		3		
III	6	3	4	2	1	2	2	0	1	0	1	3	2	1		
IV	8	6	6	5	1	0	2	1	0	1	0	5	1	4		
V	6	3	2	1	0	1	0	-	-	-	-	2	1	1		
VI	5	3	3	1	1	2	0	-	-	-	-	3	2	1		
VII	4	1	2	2	0	0	2	0	0	1	1	2	2			
VIII	6	6	6	1	4	2	4	0	4	0	0	5	4	1		
IX	6	5	5	3	2	0	0	-	-	-	-	5	1	4		
X	4	3	2	0	0	2	1	1	0	0	0	2		2		
Total	55	37	36	18	9	12	14	5	5	2	2	32	13	21		

Chart Number 14: Storage Concepts and Confidential Data Factors - Computerized EIS

Questionaire Cross Reference: Questions 14 and 15

Definitions

RESP - Response to specific subordinate question
INDEF - Emission inventory data kept indefinitely
DISCARD - Emission inventory data dixcarded as new data becomes available
HISTORY - Emission inventory data which is changed is recorded on historical files.

REGION	AGENCIES IN REGION	AGENCIES WITH COMPUTER SYS.	RETENTION OF DATA				PERCENT OF SOURCES THAT CONTAIN CONFIDENTIAL DATA					AVAILABLE SYSTEM TO PROTECT CONFIDENTIAL DATA				
			RESP	INDEF	DIS-CARD	HIS-TORY	RESP	NONE	0-2%	2-4%	4-6%	RESP	YES	NO		
I	6	2	1			1	1	1				1		1		
II	4	1	1		1		1				1	1		1		
III	6	3	2		1	1						2		2		
IV	8	2	2	1	1		2	1			1	2		2		
V	6	3	3	1		2	3	1	1	1		3	2	1		
VI	5	2	2	1	1		2	2				2	1	1		
VII	4	2	2	1		1	1				1	2	1	1		
VIII	6	0	-	-	-	-	-	-				-				
IX	6	0	-	-	-	-	-	-				-				
X	4	1	1			1	1		1			1		1		
Total	55	16	14	4	4	6	11	5	2	1	3	14	4	10		

Chart Number 15: Manpower Requirements - Manual Emission Inventory Systems

Questionaire Cross Reference: Questions 16, 17, and 19

Definition:

RESP - Response to specific subordinate question

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANPOWER (Man-Years)						FEDERAL REPORTING CAUSING IMPACT			AGENCY HAS REPORTED IN NEDS FORMAT				
			RESP	0-1	1-2	2-3	4-5	5	RESP	YES	NO	RESP	YES	NO		
I	6	4	3	2	1				3		3	3	1	2		
II	4	3	3	1	2				3		3	3	1	2		
III	6	3	3	1	1	1			3	2	1	3	1	2		
IV	8	6	5	1	2		1	1	5	3	2	6	5	1		
V	6	3	2	1				1	2	1	1	3	1	2		
VI	5	3	3		2			1	3		3	3		3		
VII	4	2	1	1					2	1	1	2	1	1		
VIII	6	6	5	4	1				6	4	2	6	2	4		
IX	6	5	4	3			1		4	1	3	5	1	4		
X	4	3	3	2			1		3	1	2	3	1	2		
Total	55	38	32	16	9	1	3	3	34	13	21	37	14	23		

Chart Number 15: (continued)

Questionaire Cross Reference: Question 16, 17, 19

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	REASONS FOR NON-SUBMITTAL													
			CONTR	NOT NEED	NO SYS	OTHER										
I	6	1		1												
II	4	0														
III	6	2				2										
IV	8	1				1										
V	6	0														
VI	5	2	2													
VII	4	1				1										
VIII	6	3				3										
IX	6	2	2													
X	4	2				2										
Total	55	14	4	1		9										

Chart Number 16: Manpower Requirements - Computerized Emission Inventory Systems

Questionaire Cross Reference: Questions 16, 17, and 19

Definition:

RESP - Response to specific subordinate question.
CONTR - Reports compiled and submitted by contractor.

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANPOWER (Man-years)					FEDERAL REPORTING CAUSES IMPACT			AGENCY HAS REPORTED IN NEDS FORMAT			REASONS FOR NON-SUBMITTAL		
			RESP	0-1	1-2	2-3	5	RESP	YES	NO	RESP	YES	NO	CONTR	NO SYS	OTHER
I	6	2	2	1	1			1	1		1	1				
II	4	1	1				1	1		1	1		1			1
III	6	3	3		2		1	2		2	3	1	2			2
IV	8	2	2		1		1	2		2	2	2				
V	6	3	3	1	1		1	2	1	1	3	2	1			
VI	5	2	2	1			1	2		2	2	1	1	1		
VII	4	2	2	1	1			2		2	2	2				
VIII	6	0														
IX	6	0														
X	4	1						1		1	1		1			1
Total	55	16	15	4	6		5	13	2	11	15	9	6	1		4

Chart Number 17: Methods Used to Submit Semi-Annual Reports

Questionaire Cross Reference: Question 18

What procedure does the agency use to transmit semi-annual emission inventory reports to EPA regional offices?

REGION	AGENCIES IN REGION	AGENCIES WITH MANUAL SYSTEMS	MANUAL SYSTEMS				AGENCIES WITH COMPUTER SYS.	COMPUTER BASED SYSTEMS								
			RESP	NEDS LIST	LOCAL LIST	NEDS FORMS		RESP	NEDS LIST	PUNCH CARDS	TAPE	CARO-TAPE LIST	NEDS FORMS			
I	6	4	4	2	1	3		2		1		1				
II	4	3	3		2	1		1		1						
III	6	3	2	1		2		3	2			2	1			
IV	8	6	6			6		2				1	1			
V	6	3	3		2	1		3	2			1	2			
VI	5	3	3	2		1		2				1	1			
VII	4	2	2			2		2			2					
VIII	6	6	6	1	4	1		0								
IX	6	5	1			1		0								
X	4	3	3	2		1		1					1			
Total	55	38	33	8	9	19	-	16	4	2	2	6	6			

Chart Number 18: Compatibility of Agency Emission Inventory Systems with NEDS

Questionaire Cross Reference: Question 20

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM						RESPONSES RECEIVED	COMPUTER BASED					
			NO ELEM	SRC IDEN	SCC	UNITS	DATA TYPES	SRC DEF		NO ELEM	SRC IDEN	SCC	UNITS	DATA TYPES	SRC DEF
I	6	4	2	4	3	3	3	2	1	1	1	1	1	1	1
II	4	2	1	1	1	1	2	1	1		1			1	
III	6	3	1	1	1	1	0	1	3				2	2	1
IV	8	6	3	4	4	4	4	4	2	2	2	2	2	2	2
V	6	3	3						2	1			2	1	1
VI	5	3	3	3	3	3	3	3	2	2	2	2	2	2	2
VII	4	1	1	1	1	1	1	1	2	2	1	2	2	2	2
VIII	6	1	1												
IX	6	4	2	3	3	4	1	4							
X	4	2		1	1	1		1	1				1	1	
Total	55	29	17	18	17	18	14	17	14	8	7	7	12	12	9

Chart Number 19: Agency Satisfaction with Current Emission Inventory System

Questionaire Cross Reference: Question 21

Does the agency consider the emission inventory system generally adequate and efficient for meeting internal agency needs?

Definitions:

SAT - Satisfactory
MOST - Satisfactory for most purposes
SOME - Satisfactory for a few purposes
NOT SAT - Not satisfactory

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM				RESPONSES RECEIVED	COMPUTER BASED SYSTEM								
			SAT	MOST	SOME	NOT SAT		SAT	MOST	SOME	NOT SAT					
I	6	4	1		2	1	2		1		1					
II	4	2	1			1	1	1								
III	6	3		1	1	1	3	1	1	1						
IV	8	6		1		5	2	1			1					
V	6	3				3	3	1	1		1					
VI	5	3		1	2		2			2						
VII	4	2	1	1			2	2								
VIII	6	6	1	2	2	1										
IX	6	5			2	3										
X	4	3		2	1		1	1								
Total	55	37	4	8	10	15	16	7	3	3	3					

Chart 20. Summary of Form 1:
Basic Characteristics of Computerized Emission Inventory Systems

BASIC CHARACTERISTICS	TOTAL
Data Storage:	
Tape	6
Cards	5
Disk/Drum	4
Tape and Disk	3
NEDS Compatibility	
Input	4
Output	6
Units of Measure	5
Field Sizes	5
Data Elements	8
Basic Capability	
File Maintenance	11
Data Edit	11
Data Validation	6
Emission Calculations	7
Logical Retrieval	10
Generation Capability	
Formatted File Dump	10
Multiple Report Forms	8
Summary Reports	13
Variable Reports	5
System Language	
ANSI COBOL	6
ANSI FORTRAN	2
Both	4
Other	1

Chart Number 21: Types of Air Quality Data Systems

Questionaire Cross Reference: Question 22

What type of system does the State agency use for storing and processing air quality data?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MAN SYS.	PUNCH CARD SYS.	COMPUTER BASED SYSTEM		BOTH MAN. AND COMP SYS.	NONE								
					AVL.	NOT AVL.										
I	6	6	4	1	1											
II	4	4	1		2			1								
III	6	6	3		3											
IV	8	8	1	1	6											
V	6	6	2		1	3										
VI	5	5	1	1		3										
VII	4	4	2	2												
VIII	6	6	2		2	1	1									
IX	6	5	4		1											
X	4	4	1		3											
Total	55	54	21	5	19	7	1	1								

Chart Number 22: Editing of Air Quality Data

Questionaire Cross Reference: Question 23

How is the air quality data edited?

Definitions:

M - Manual system
CB - Computer based system
PC - Punch card system

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL EDITING			COMPUTER BASED SYSTEM			BOTH			NONE				
			M	CB	PC	M	CB	PC	M	CB	PC					
I	6	6	4							1	1					
II	4	4	1	1						1		1				
III	6	6	3	1					1	2						
IV	8	8	1				1	1		5						
V	6	6	2				1			2		1				
VI	5	5	1		1		3									
VII	4	4	2		1			1								
VIII	6	6	2				1		1	3						
IX	6	5	3							1		1				
X	4	4	1	1			1			1						
Total	55	54	20	3	2	0	7	2	2	16	1	3				

Chart Number 23: Storage Concepts - Manual Air Quality Systems

Questionaire Cross Reference: Question 24

Characteristics of the storage of air quality data.

Definitions:

SEP STR - Air quality data stored in separate file
ORIG - Original source forms
SAROAD - SAROAD forms

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	FORM OF STORAGE			STORAGE VOLUME (file drawers)		
			SEP STR	ORIG	SAR-OAD	0-2	3-6	6-10
I	6	5	5	3	2	1	3	2
II	4	2	2		1	2		
III	6	5	5	3	2	1	2	2
IV	8	2	2	1		1		1
V	6	3	3	3		3		
VI	5	2	2	1	1		1	1
VII	4	4	4	3	1	3	1	
VIII	6	3	3	1	2	3		
IX	6	5	5	1	4	4	1	
X	4	1	1	1	1	1		
Total	55	32	32	17	14	18	8	6

Chart Number 24: Source Forms for Air Quality Data

Questionaire Cross Reference: Question 25

What is the source of data for the air quality system?

Definitions:

RESP - Response to specific subordinate question
SAROAD- SAROAD forms
LOCAL - Local forms

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM			COMPUTER SYSTEM			PUNCH CARD SYSTEM							
			RESP	SAR-OAD	LOCAL	RESP	SAR-OAD	LOCAL	RESP	SAR-OAD	LOCAL					
I	6	6	4	3	1	1		1	1	1						
II	4	3	1	1		2		2								
III	6	6	5	3	3	2	1	1								
IV	8	8	1	1	1	6	3	3	1	1						
V	6	6	2	2		4	1	3								
VI	5	5	1	1		2	2		2	2						
VII	4	4	2	1	1				2	2						
VIII	6	6	3	3		4	2	3								
IX	6	5	4	4		1		1								
X	4	2	1	1		1	1									
Total	55	51	24	20	6	23	10	14	6	6	0					

Chart Number 25: File Maintenance Concepts - Air Quality System

Questionaire Cross Reference: Question 27

How frequently is the air quality data file updated?

Definitions:

RESP - Response to specific subordinate question
AS REC - As received

REGION	AGENCIES IN REGION	AGENCIES WITH MANUAL SYSTEMS	INTERVAL BETWEEN UPDATE MANUAL SYSTEM					AGENCIES WITH COMPUTER SYS.	INTERVAL BETWEEN UPDATE COMPUTER SYSTEM							
			RESP	AS REC	1 MO	3 MO	OTHER		RESP	AS REC	1 WK	1 MO	OTHER			
I	6	4	4	1	2		1	1	1	1						
II	4	1	1	1				2	2	2						
III	6	3	3	2	1			3	3		2	1				
IV	8	2	2	1	1			6	6	1	2	4				
V	6	2	1			1		4	4			4				
VI	5	2	2	1		1		3	3		1	1	1			
VII	4	4	4		1	3		0								
VIII	6	3	3		1	2		3	3	2			1			
IX	6	4	4	3	1	2		1	1			1				
X	4	1	1			1		3	3			2	1			
Total	55	26	25	9	7	10	1	26	26	6	5	13	3			

Chart Number 26: Storage Concepts for Air Quality Data

Questionaire Cross Reference: Question 28

How long are air quality measurements kept in the active file?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	IN-DEF	ACT 1-2 YRS	ACT 3-5 YRS	ACT >5 YRS	SUM. AND HIST.	SUM. AND DELET	OTHER							
I	6	6	4	1		1										
II	4	3	3													
III	6	6	4		1			1								
IV	8	8	4	3			1									
V	6	4		3			1									
VI	5	5	4	1												
VII	4	4	4													
VIII	6	6	6													
IX	6	4	4													
X	4	4	3													
Total	55	50	36	8	1	1	2	1	1							

Chart Number 27: Submission of SAROAD Data

Questionaire Cross Reference: Question 29

Has the agency submitted air quality data in the SAROAD formats?

Note: The column labeled "NADB" is included for comparison. NADB data was extracted from a NADB printout entitled "Summary of Valid Data, National Aerometric Data Bank," dated July 17, 1974 and represents a summary of reports through the first quarter of 1974.

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM		COMPUTER SYSTEM		PUNCH CARD SYSTEM		NADB							
			YES	NO	YES	NO	YES	NO								
I	6	6	4		1		1		0							
II	4	4	1	1	2				1							
III	6	6	4		2				4							
IV	8	8	1		6		1		8							
V	6	6	2		3	1			6							
VI	5	5	1		3		1		4							
VII	4	4	2				2		4							
VIII	6	6	2		4				6							
IX	6	5	4		1				5							
X	4	4	1		3				4							
Total	55	54	22	1	25	1	5	0	42							

Chart Number 28: SAROAD Compatibility

Questionaire Cross Reference: Question 30a

Is the data in the agency's air quality data file compatible with all elements of the SAROAD site and data reporting forms?

Definitions:

COM - Compatible
NOT COM - Not compatible

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM		COMPUTER SYSTEM		PUNCH CARD SYSTEM									
			COM	NOT COM	COM	NOT COM	COM	NOT COM								
I	6	6	4		1		1									
II	4	3			3											
III	6	6	3	1	2	1										
IV	8	8	1		6		1									
V	6	6	2		4											
VI	5	5	1		3		1									
VII	4	4	1	1			1	1								
VIII	6	6	3		2	2										
IX	6	5	4			1										
X	4	4	1		2	1										
Total	55	53	20	2	23	5	4	1								

Chart Number 29: Method of Submitting Air Quality Data

Questionaire Cross Reference: Question 31

What procedures does the agency use to transmit quarterly air quality reports to EPA regional offices?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM			COMPUTER SYSTEM				PUNCH CARDS						
			SAROAD			SAROAD				SAROAD						
			FORMS	CARDS	TAPE	FORMS	CARDS	TAPE	OTHER	FORMS	CARDS	OTHER				
I	6	6	4					1	1	1						
II	4	3	1			1		2								
III	6	6	4			1	1	1								
IV	8	8		1		1	3	4				1				
V	6	6	2	1				3	1							
VI	5	5	1				1	2		1						
VII	4	4		1	1						2					
VIII	6	6	2	1			1	3								
IX	6	5	4					1								
X	4	4	1				3	1								
Total	55	53	19	4	1	3	9	18	2	2	2	1				

Chart Number 30: Staffing Levels for Air Quality Systems

Questionaire Cross Reference: Question 32

Considering only the filing, file maintenance, data processing, or compilation and report generation functions, how many man-years per year are employed to operate the air quality data system?

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	STAFFING LEVELS IN MAN-YEARS BY TYPE OF SYSTEM													
			MANUAL					COMPUTER					PUNCHED CARDS			
			0-1	1-3	3-5	5-10	>10	0-1	1-3	3-5	5-10	>10	0-1	1-3	3-5	5-10
I	6	6	3	1					1							1
II	4	3	1						1			1				
III	6	5	1	2				1	1	1						
IV	8	8		1				2	5				1			
V	6	3						1	2							
VI	5	4		1				1			1			1		
VII	4	4	1	1									1	1		
VIII	6	5	2	1				2	1							
IX	6	5	2	1	1				1							
X	4	3		1				2								
Total	55	41	10	9	1			9	12	1	1	1	2	2		1

Chart Number 31: Agency Satisfaction with Existing Air Quality System

Questionaire Cross Reference: Question 33

Definitions:

SAT - Agency generally satisfied with existing system
MOST - Agency satisfied with most aspects of existing system
SOME - Agency satisfied with a few aspects of existing system
NOT SAT - Agency generally dissatisfied with existing system

REGION	AGENCIES IN REGION	RESPONSES RECEIVED	MANUAL SYSTEM				COMPUTER SYSTEM				PUNCH CARD SYSTEM					
			SAT	MOST	SOME	NOT SAT	SAT	MOST	SOME	NOT SAT	SAT	MOST	SOME	NOT SAT		
I	6	6	0	1	0	3	1	0	0	1	0	0	0	0		
II	4	3	1	0	0	0	2	0	0	0	0	0	0	0		
III	6	6	0	2	0	1	2	0	1	0	0	0	0	0		
IV	8	8	0	0	0	1	5	0	0	1	0	0	0	1		
V	6	6	0	0	0	2	2	0	1	1	0	0	0	0		
VI	5	5	0	0	0	1	1	0	2	0	0	0	0	1		
VII	4	4	1	1	0	0	0	0	0	0	2	0	0	0		
VIII	6	6	0	1	1	1	1	2	0	0	0	0	0	0		
IX	6	5	1	0	1	2	0	0	1	0	0	0	0	0		
X	4	4	0	1	0	0	2	1	0	0	0	0	0	0		
Total	55	53	3	6	2	11	16	3	5	3	2	0	0	2		

Chart 32. Summary of Form 2:
Basic Characteristics of Computerized Air Quality DAta File Systems

BASIC CHARACTERISTICS	TOTAL
Data Storage	
Cards	12
Tape	21
Disk/Drum	6
SAROAD Compatibility	
Input	16
Output	23
Units of Measure	21
Field Sizes	20
Data Elements	20
Basic Capabilities	
File Maintenance	24
Data Edit	25
Data Validation	19
Statistical Processing	23
Logical Retrieval	20
Generation Capability	
Formatted File Dump	20
Multiple Report Forms	20
Summary Reports	26
Statistical Reports	21
System Language	
ANSI COBOL	7
ANSI FORTRAN	8
Both	10
Other	5

Table B-1. Compilation of Emission Inventory Sources

			SURVEY RESULTS		
				REPORTED AREA SOURCES	
REGION	STATE	NEDS*	POINT SOURCES	NUMBER	METHOD
I	Connecticut	477	4000-5000	9200	Conn. grid
	Maine	1231	650	unknown	region
	Massachusetts	1048	800	variable grids	UTM and MASS
	New Hampshire	576	578	10	county
	Rhode Island	164	100	0	none
	Vermont	403	500		county
II	New Jersey	1482	110,000	0	none
	New York	890	150,000	0	none
	Puerto Rico	693	500	0	none
	Virgin Islands	105	85	3	county
III	Delaware	400	1640	494	county; UTM
	District of Columbia	107	not reported	--	--
	Maryland	1543	13000		State county grid
	Pennsylvania	4531	not reported	--	--
	Virginia	824	3959	incl. in pt. src.	county, UTM
	West Virginia	550	890	55	county
IV	Alabama	1668	1687	67	county
	Florida	2150	3000	67 + grids	county; UTM
	Georgia	1047	400-500	159	county
	Kentucky	2577	900	2000	county
	Mississippi	3036	3000	not reported	county; UTM
	North Carolina	3176	1450	not reported	not reported
	South Carolina	888	600	46	county
	Tennessee	2401	800	91	county
V	Illinois	2690	15000	96	county
	Indiana	2695	9000	not reported	--
	Michigan	1124	12000	not reported	not reported
	Minnesota	684	not reported	--	--
	Ohio	3264	not reported	--	--
	Wisconsin	897	500	72	county
VI	Arkansas	694	not reported	72	not reported
	Louisiana	1249	1000	64	county
	New Mexico	1177	not reported	32	not reported
	Oklahoma	823	not reported	76	county
	Texas	4027	not reported	--	--
VII	Iowa	3149	4500	100	county
	Kansas	4079	5000	not reported	--
	Missouri	574	300	93	county

Table B-1. Compilation of Emission Inventory Sources (continued)

REGION	STATE	NEDS*	SURVEY RESULTS POINT SOURCES	REPORTED AREA SOURCES NUMBER	REPORTED AREA SOURCES METHOD
VIII	Colorado	451	3000	not reported	county; AQCR
	Montana	342	150	5	AQCR
	North Dakota	1723	1000	not reported	county
	South Dakota	1491	600	not reported	county
	Utah	231	not reported	--	county; UTM
	Wyoming	257	not reported	--	county
IX	Arizona	258	500	14	county
	California	7283	4000-6000	58	county
	Hawaii	535	400	6	county
	Nevada	303	200	16	county
	Guam	12	20	not reported	--
X	Alaska	267	275	29	census div.
	Idaho	518	not reported	--	--
	Oregon	1468	290	not reported	UTM
	Washington	914	not reported	1000	county

*NEDS: Data entries are "Plant Points". NEDS Point Source listing dated July 21, 1974

Table B-2. Summary of Staff Increases and Impacts Occasioned by Semi-Annual Report of Emission Inventory Data

REGION	STATE	PERCENT INCREASE	NUMBER INCREASE	IMPACT	PREVIOUS REPORT
I	Connecticut	100	1/2	decrease manpower	yes
	Maine	NR	NR	NR	no
	Massachusetts	NR	NR	NR	NR
	New Hampshire	0		none	no
	Rhode Island	0		none	yes
	Vermont	0		none	NR
II	New Jersey	0		none	no
	New York	0		none	no
	Puerto Rico	0		none	yes
	Virgin Islands	0		none	no
III	Delaware	0		NR	NR
	Dist. of Columbia	0		NR	NR
	Maryland	0		NR	NR
	Pennsylvania	0		NR	NR
	Virginia	100	NR	NR	NR
	West Virginia	100	3	negative	NR
IV	Alabama	0		NR	NR
	Florida	NR		NR	yes
	Georgia	0		NR	NR
	Kentucky	NR		significant	NR
	Mississippi	60	2-3	decrease manpower	NR
	North Carolina	0		NR	NR
	South Carolina	0		NR	NR
	Tennessee	100	2	Minimal	NR
V	Illinois	NR	NR	decrease manpower	no
	Indiana	0		NR	no
	Michigan	0		none	yes
	Minnesota	NR		NR	yes
	Ohio	100	NR	decrease manpower	no
	Wisconsin	NR		NR	yes
VI	Arkansas	0		NR	no
	Louisiana	0		NR	no
	New Mexico	0		NR	no
	Oklahoma	0		NR	no
	Texas	0		NR	yes

Table B-2. Summary of Staff Increases and Impacts Occasioned by Semi-Annual Report of Emission Inventory Data (continued)

REGION	STATE	PERCENT INCREASE	NUMBER INCREASE	IMPACT	PREVIOUS REPORT
VII	Iowa	0		NR	yes
	Kansas	0		NR	no
	Missouri	small	1	none	yes
	Nebraska	0		NR	yes
VIII	Colorado	NR	3	NR	NR
	Montana	200	1-3	yes	NR
	North Dakota	0		NR	NR
	South Dakota	0		NR	NR
	Utah	NR	NR	yes	NR
	Wyoming	200	NR	NR	NR
IX	Arizona	0		NR	NR
	California	NR	NR	yes	no
	Hawaii	NR	NR	NR	no
	Nevada	0		NR	yes
	Guam	0		NR	no
X	Alaska	0		NR	NR
	Idaho	NR		NR	NR
	Oregon	0		NR	NR
	Washington	0		NR	NR

Note: "NR" means "not reported," "no response" or unknown.

Table B-3. States Generally in Compliance with SIP Reporting Regulations under §51.7 as Applicable to NADB

REGION	STATE REQUIRED	STATES REPORTING TOTAL[1] POINT SOURCES ACHIEVING COMPLIANCE		
		Back[2]	Quarters I, II 1973	Quarters III, IV 1973
I	6	6	3	0
II	2[3]	1	0	0
III	6[4]	5	1	3
IV	8	8	6	0
V	6	6	1	1
VI	5	5	4	0
VII	4	4	4	3
VIII	6	5	5	4
IX	4[5]	4	3	1
X	4	4	0	2
TOTAL	51	43	27	14

1. Point sources achieving compliance with plan regulation plus those achieving compliance since plan development (AQ Baseline date).
2. Back = data subsequent to plan.
3. Not including Puerto Rico and Virgin Islands
4. Includes District of Columbia
5. Not including Guam and American Samoa.

Source: NADB Monthly Status Report, dated July 30, 1974.